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No. 10



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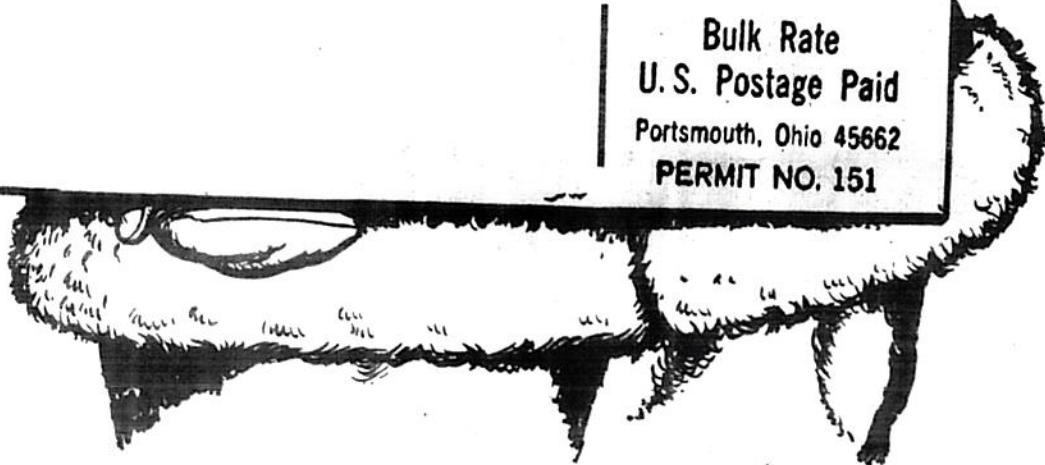
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T-S Horizons

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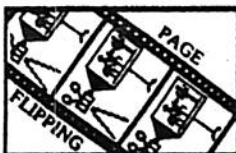
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#2 Dec '83 Matrix/Cursor Input (Johnson), User-Friendliness, Reset Switch Project, Memory Reduction, Rule of 78, ZX Cash Register, Graphics Tutorial, etc!



#3 Jan/Feb '84 Two Animation Programs, Simple Loading Aid Proj. (Young), Tape File Protection, Differential Equations, Ham Radio Reviews, User Group News & More!



#4 March '84 The Death of TCC, TS1000 Bank Switching (Hunter), Error Recovery (Johnson), Edge Connector Schem., Simpson Rule, Reviews, Reader Input, & more!



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#7 July/Aug '84, Telecommunications Issue, 2068 Program Tips, How A Compiler Works, Rotating Globe, Byte-Back Modem, TC for Beginner, Switching-4, WORK-3, S.I.N., etc.



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ENTER

Dear Readers,

We thought we would go out on a limb in this issue and try something new. The result is the institution of the soon-to-be coveted "New Horizon Awards". These are not material trophies that will be sent out to any of the recipients, but merely a published acknowledgement of contributions made by individuals, organizations, and companies which have benefitted the Timex and Sinclair user community.

To accompany these awards we thought it would be appropriate to establish the "Dark Horizon Awards." These are intended to be in the same vein as the "Dubious Achievement Awards" that Esquire magazine confers annually. We hope no one will take the "Dark" awards too seriously, they are merely an attempt at humor. (After a year like 1984, we Timex users could use a laugh or two.)

Bill Ferrebee who suggested many of the awards deserves much of the credit for the contents. (Any good lawyers in Paden City, Bill?)

BIGGER AND BETTER

Well if you thought this issue of T-S Horizons was a little heavier than usual, you're right. Counting the front and back covers this issue is 40 pages long. That's 25% more than usual. We can't promise that future issues will be forty-pages, however. Actually this issue is an experiment. The process our printer uses to print the magazine requires a lot of folding and cutting, and, as a result some of the pages near the center tend to deform and wrinkle. The folding can also cause crooked page edges. Both of these problems are multiplied as the number of pages increases. However if the results are satisfactory, you can expect to see more 40-page issues in the future.

If the layout of this issue seems particularly attractive to you compared to previous issues, the credit goes to Randy Duncan (yes, a third Duncan). Randy, the publishers brother, is responsible for the layout of this issue as well as the previous one. He has worked as a printer for several years, and has been a great help in each issue of T-S Horizons since its inception.

Paul Hunter's Bank Switching Series

Paul Hunter's memory expansion series for the TS 1000 will conclude in the next issue. Paul has added a sophisticated bubble memory to his TS 1000 and is considering writing that up as a project in a future issue. Whether he actually writes it or not will depend on reader interest. If you are interested in such a project, or if you have any comments on his series so far, please write to him at: 1630 Forest Hills Drive, Okemos, Michigan 48864. He will be glad to hear from you.

STOP THE PRESS! IMPORTANT ANNOUNCEMENT!

This is literally a last minute announcement. We received an excited phone call yesterday from David Higgenbottom. All that he has been doing since March is finally coming to fruition. He says he has received confirmation of a very substantial investment. He believes he will be able to meet Timex's requirement for acquisition of Timex computer technology.

We are really excited about these developments, and while all the arrangements have not been finalized, we wanted you to know that things are really moving. Dave has received many inquiries from people who want to participate in his "Little Computer Store" franchise. He also will be acquiring a disk drive company, whose drives are compatible with the Ramex interface.

We just wanted to tell you the good news and wish all of you, especially Dave Higgenbottom, a Merry Christmas. Further, more complete details will be published in the next issue of T-S Horizons. TSH

Rompak

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ROMPAK BRINGS YOU THE MOST POWERFUL FILE MANAGEMENT AND TAPE STORAGE—SYSTEM OUTSIDE OF A DISK DRIVE!

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BOTH FINE PROGRAMS ON ONE PLUG IN CARTRIDGE TO GIVE YOU SPEED AND POWER YOU NEVER DREAMED OF...

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- * Type one command and the program runs INSTANTLY
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- * Save and load 16K in 30 seconds!
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THE MOST PROFESSIONAL SOFTWARE PRODUCT FOR THE
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A MUST FOR THE TIMEX USER!

- * SAVE/LOAD ANY PROGRAM 15 TIMES FASTER!
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ON EPROM SEPERATELY	\$19.95

Note: A perfect add on to ZX PRO/FILE tape.

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- * CUT AND PASTE BLOCKS OF TEXT
- * AUTOMATIC LINE WRAPAROUND
- * TEXT COMPRESSION
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OR EPROM SEPERATELY	\$24.95

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FROM THE CLUTTERED DESK...

By Scott Duncan
Advertising/Circulation Manager

Reader input plus other notes of interest.

First of all I would like to thank all of you who have written to congratulate us on our first birthday. I also want to thank those who have written with suggestions and complaints.

As we are still an infant publication it helps quite a lot to know what you are thinking. We have used your suggestions in the past and want to continue to hear them. Please address your comments to me; Scott Duncan, c/o T-S HORIZONS, 2002 Summit Street, Portsmouth, Ohio 45662.

Just when I was ready to give up on putting the finishing check marks on my Christmas shopping list. This letter came across my desk. It looks like the perfect idea for us eleventh hour Santas.

Dear Mr. Duncan,

I am very pleased with the quality of your magazine. Enclosed is a pretty amazing offer that Sinclair computer users will be interested in (I have dropped the word "Timex" from my vocabulary). Please pass it along in your next issue.

Sincerely, Leonard G. Holmes, PHD

HARDWARE DEAL

American Surplus Trading (62 Joseph Street, Moonachie, New Jersey 07074) has TS1000 computers (w/o power supply) for \$14.95. They guarantee that the computers work, and they do stand behind their guarantee.

It is an early "Issue 3" computer with 3 socketed chips, the Z-80A is actually a zilog chip.

They also have 2040 printers for \$14.95. The printers are sold "as is" and include a 24V transformer (which needs wires, a plug, and a housing). They do not guarantee the printers, but mine worked. Also, the transformer

that they sent me has both 5V and 24V on it. Pretty good for under \$20. You need to add \$3.50 + 10 percent for postage and handling. Their ad is in the latest issue of Popular Science.

Of all the letters I've opened at T-S HORIZONS the following two have made it to my cluttered bulletin board. Thanks to Harvey Schmitt and Kevin R. Bulgrien for their reader input.

Dear Mr. Duncan,

People call me a trusting person--too trusting perhaps. But this time I'm sure that TSH is far too elaborate a scheme to be a scam--put me down for 12 issues.

Sincerely, Harvey Schmitt

Dear Sirs:

Enclosed is my request for a subscription. After two other TS related subscriptions bit the dust, I'm looking forward to this one which I hope sticks around. I would like all issues of "HORIZONS" except for #4 and #5 which I already have. Send 'em quick - I'm starting to drool already...My ZX awaits...

Thanks, Kevin R. Bulgrien

Now lets try to answer some questions. If anyone has a suggestion for one of these readers send it to me and I'll be sure they get it.

TASMAN QUESTION

Dear Sirs:

I am writing to tell you how much I enjoy your magazine T-S Horizons. I hope that I and all of the other T/S 2068 computerist can depend on your magazine to not drop out of the market.

I am also writing to ask you to send me the address of the magazine Syntax. You mention this magazine in your September issue.

I also want to ask if you would review some of the new items out to permit the use of Spectrum software by the 2068.

The last item that I wish to ask is if you could ask your readers if any of them could tell me how to use the TASMAN interface with a Silver Reed EXP 400 daisywheel printer. The printer use standard ASCII (642) code. The problem is one of timing. I don't get the right letters all of the time.

Thank you, Sincerely,
James L. Wells

Dear Reader:

The SYNTAX address appeared in issue #9 of T-S Horizons, but here it is anyway: SYNTAX, TSH0984, Harvard, MA 01451-0667.

CPM FOR THE ZX81

Dear Sir:

Have been receiving your small magazine for the past little while and really enjoy it. Hope you keep it up.

Would it be possible to query your readers as to the possibilities of CPM Compatibility on their ZX81? I have occasionally run across some older advertisement that suggest CPM compatibility. A product named "Timebox" by the Val Corporation was advertised in various magazines in the boom years of the ZX81. If any of your readers have succeeded in running CPM on their ZX81, I would very much like to hear from them.

Keep up the good work. You have many friends here in Canada.

Thank you, Donald Tambeau, 11 Carium Road, Box 856, Schumacher, Ontario, Canada P0N1G0

Well Readers, consider yourselves queried.

FROM THE LAND DOWN UNDER

Dear Sir:

My subscription to your magazine and to San Francisco's Timelinez - form my somewhat tenuous link with developments concerning the T/S 2068 and naturally I eagerly await reception of both publications. Disappointingly, as of this date, I have yet to receive copies of issue #5 - April/May 1984 and issue #7 - July/August 1984, although both issues #6 and #8 have arrived safely and promptly.

Consequently I would greatly appreciate your efforts in determining if, in fact, these "precious" issues have been dispatched! - and rectify the situation!

I'm most impressed with your publication, its worthwhile content and pleased to be a subscriber.

Yours faithfully,

W.R. Reid

Auckland, New Zealand

Sorry for the delay, W.R. watch your mailbox.

MORE ON TS COMPUTING

First of all, I have to congratulate you on your anniversary issue especially the cover. The new "T/S HORIZONS" design is fantastic. Besides that, it has the added color feature. The issue itself is superb (aren't they all?). Now, to answer Rick Duncan's second question about that guy (?) Michael Wilson. That article was more than appropriate it was needed. I was going to subscribe to "TS Computing", but I wanted a little more information about it. I wrote three letters to him and never got a reply. I tried to call him and like you, I was informed that his number had been changed. Then I read about him in your September issue, and again in your anniversary issue. I feel it is time to express my feelings about this individual. I want to see him come up with a magazine that has as much quality as half of T-S-H. He obviously does not have much intelligence if he thinks that the Timex future is bleak. And you can't say much about someone who doesn't even pay for something he orders.

I welcome any comments anybody might have about my sentiments.

Thank you, Cris Cottrell

Well, that's it for the first installment of my hopefully informative column. Please write and let me know if I should do it again in issue eleven. Remember, when writing to include a return address and even a phone number if you want. We often get mail without either and it becomes impossible to process an order or answer a question.

Have a Merry Christmas and we'll see you next year.

TSH

Welcome to the first installment of the T/S Help and Information. This column is designed to answer questions, give advice, and give general information about the Timex Sinclair family of computers.

Our first letter is from John Novak of Munster, Indiana.

I have a ZX81 and I have been doing some changing of the basic unit. The problem I have is I can not get my ZX81 out of the shift mode. I added a keyboard and had no problem, but when I tried to increase the size of my heat sink, it started.

It appears, when you added your new heat sink, you shorted out one of the keyboard signal lines. Try removing the heat sink and test the computer to see if this fixes it. If the problem is gone, put the heat sink back on and insulate it from any exposed connections. If the problem is still pre-

sent, try disconnecting line KO from the computer, this is the signal line for the shift key, and work your way back to the keyboard, while checking for shorts.

Many letters have complained about the inverse characters in the magazine being unreadable. The main cause of this, is using Radio Shack's thermal paper. This paper prints somewhat darker than the paper supplied with the printer when it was purchased. In the future an effort will be made to correct this.

This concludes the first installment of T/S Help, your letters are greatly appreciated, and are a necessary part of this column. You can now address all of your questions technical or non-technical, comments or suggestions to me directly.

Send to: John Marion, HC 63, Box 650, Greenup, Kentucky 41144

Due to a rather good response to a recently published request for user group information, here is a partial list of T/S Groups. If you don't see one in your area then look again next month when I will give you some more. This partial listing is due to a lack of space.

Is your group listed?

USER GROUPS

Silcon Valley Sinclair
User Group
P.O.Box 4133
Santa Clara, CA 95054

Bakersfield Timex Sinclair
Users Group
2617 Anza Street
Bakersfield, California 93305
(805) 871-7024
Contact - Don Stewart

San Diego California Timex/Sinclair
Users Group
809 Oaklawn Avenue
Chula Vista, CA 92011
George Luhrs

E B ZUG
654 40th Street
Richmond, CA 94805
Joel Brody

Abilene T/S Users Group
609 E.N. 18th
Abilene, TX 79601
Chris Nystrom

List Group
P.O.Box 498
Centerport, NY 11721
Paul J. Donnelly

Timex Sinclair Users Group
914 S. Victor Way
Aurora, CO 80012
Jeff Brothers
Seatug
3501 88th Avenue, SE #350
Mercer Island, WA 98040
Jim Hood

NOTICE TO ADVERTISERS

Have you been thinking about advertising in T-S HORIZONS? If so, then write to us now and reserve your right to advertise at our current low rates until July 1, 1985. Just let us hear from you by January 10, 1985. Meeting this deadline will also qualify you for an equal size ad in Computer Trader Magazine (CTM). All you have to do is buy two ads in T-S HORIZONS and we'll do the rest by special arrangement with CTM. Write now for our low ad rates.



WRITTEN BY DOUG GANGI



For the 2068 Refer to chapter 18 of the TIMEX manual for 40-90.

```
1 RESTORE : GO SUB 9000
2 RANDOMIZE
3 PRINT INK 2; PAPER 4; FLASH
1; AT 2,7; "MERRY CHRISTMAS"
4 FOR i=3 TO 5: PRINT INK 2;
PAPER 4; FLASH 1; AT i,7; " "; AT i
,23; " "; NEXT i
10 PRINT AT 3,8; INK 4; "MERRY
CHRISTMAS"
11 PRINT AT 4,8; INK 2; " FROM
T-3"; AT 5,13; INK 4; "HORIZONS"
12 PRINT INK 2; PAPER 4; FLASH
1; AT 6,7; "HORIZONS"
15 INK 4
20 FOR i=32 TO 80: PLOT i,i: D
RAW INK 4; (80-i),0: PLOT 80,i: D
RAW INK 4; (80-i),0: NEXT i
25 PLOT INK 4; 80,80: DRAW INK
6; 0,10: PLOT INK 6; 77,87: DRAW I
NK 6; 6,0
27 PRINT INK 0; AT 14,15; " Unto
you"; AT 16,17; "there has been";
AT 18,17; "born a Savior"
30 FOR i=15 TO 31: PLOT INK 1;
70,i: DRAW INK 1; 20,0: NEXT i
40 PRINT AT 15, AND#4+8; PAPER
4; INK AND#4; "a"
50 PRINT AT 16, AND#4+7; PAPER
4; INK AND#4; "a"
: REM - use "graphics a", i.e.,
SHIFT-9, then "a", in lines 40
to 80
60 PRINT AT 18, AND#13+3; PAPER
7; INK AND#4; "a"
70 PRINT AT 14, AND#2+9; PAPER
4; INK AND#4; "a"
80 PRINT AT 17, AND#7+6; PAPER
4; INK AND#4; "a"
90 FOR i=1 TO 8: PRINT AT 19, R
ND#13+3; INK AND#7; FLASH AND#1;
"b" : REM - use "graphics b",
i.e., SHIFT-9 then "b"
100 NEXT i
110 RESTORE 800: FOR i=1 TO 30:
READ a,b: BEEP a/2,b: NEXT i
120 PAUSE 100: RESTORE 900: FOR
i=1 TO 61: READ c,d: BEEP c/2,d
: NEXT i
130 PAUSE 120: RESTORE 1000: FO
R i=1 TO 57: READ e,f: BEEP e/3,
f: NEXT i
```

```
140 RESTORE 1010: PAUSE 150: FO
R i=1 TO 96: READ g,h: BEEP g/5,
h: NEXT i
150 PAUSE 120: GO TO 100
800 DATA 1,2,1,7,,5,7,,5,9,,5,7
,,5,6,1,4,1,4,1,4,1,9,,5,9,,5,11
,,5,9,,5,7,1,6,1,2,1,2,1,11,,5,1
1,,5,12,,5,11,,5,9,1,7,1,4,,5,4,
,,5,4,1,2,1,9,1,6,3,7
900 DATA 1,8,,75,5,,25,5,1,5,1,
7,,75,9,,25,9,1,5,9,,5,9,,5,7,,5
,9,1,10,1,4,1,7,1,5,5,1,9,,75,5,
,25,5,1,5,1,7,,75,9,,25,9,1,5,9,
,5,9,,5,7,,5,9,1,10,1,4,1,7,1,5,
,5,5,12,,5,12,,5,9,1,5,14,,5,10,
,5,12,,5,10,1,5,10,,5,10,,5,10,
,5,7,1,5,12,,5,10,,5,10,,5,9,1,9,
,1,0,,75,5,,25,5,1,5,1,7,,75,5,,2
5,9,1,5,9,,5,9,,5,7,,5,9,1,10,1,
4,1,7,1,5
1000 DATA 1,12,,75,11,,25,9,1,5,
7,,5,5,1,4,1,2,1,5,9,,5,7,1,5,9,
,5,9,1,5,11,,5,11,3,12,,5,12,,5,9,
,12,,5,11,,5,9,,5,7,,75,7,,25,5,
,5,4,,5,12,,5,12,,5,11,,5,9,,5,7,
,75,7,,25,5,,5,4,,5,4,,5,4,,5,4,
,5,4,,25,4,,25,5,1,5,7,,25,5,,25
,4,,5,2,,5,2,,5,2,,25,2,,25,4,1,
5,5,,25,4,,25,2,,5,0,1,12,,5,9,,
75,7,,25,5,,5,4,,5,9,1,4,1,2,4,9
1010 DATA 1,0,1,9,1,7,1,5,3,0,,5,9
,0,,5,0,1,0,1,0,1,7,1,5,4,2,1,10,
1,10,1,9,1,7,4,4,1,14,1,10,1,10,
1,7,4,9,1,0,1,0,1,7,1,5,4,0,1,10,
1,0,1,7,1,5,0,2,1,2,1,10,1,10,
1,7,1,12,1,10,1,10,1,10,1,14,1,
12,1,10,1,7,4,5,1,9,1,9,2,9,1,9,
1,9,2,9,1,9,1,10,1,5,5,,5,7,4,9,
1,10,1,10,1,10,1,10,1,10,1,0,1,0,
,5,9,,5,9,1,0,1,7,1,7,1,9,4,7,1
,9,1,9,2,0,1,0,1,9,0,1,0,1,10,
1,5,5,,5,7,4,0,1,10,1,10,1,10,1,
10,1,10,1,0,1,9,,5,9,,5,9,1,10,1,
12,1,10,1,7,4,5
8999 STOP
9000 RESTORE 9000: FOR i=USR "a"
TO USR "b"+7: READ c: POKE i,c:
NEXT i: RETURN
9500 DATA 50,125,255,255,255,255
,125,60
9510 DATA 255,129,129,129,129,12
9,129,255
9999 INK 0
```



ODDS, ENDS, ETC.

By: Tex Faucette

While most of the "survivors" of the recent Great Magazine Showdown, as well as the majority of their advertisers, are ignoring our favorite computers, an occasional reference does appear now and then. One recently mentioned a 2800 member "Southwestern Sinclair Users Group", whose President, John Brown, Jr. is supposed to be running a BBS with a "\$30 Timex Sinclair ZX-81". Unfortunately, they failed to give address or telephone number. Lynching mob, anyone? (Popular Computing, Dec. 84)

Readers in the Dallas/Ft. Worth area should know that there are Users Groups in both of those cities. Contact for the Ft. Worth group is Tim Ward, the Haystack Apartments, 8300 Calmont, Ft. Worth, Texas 76116. Their current Newsletter #10, edited by David Bauluch, contains a wealth of information including a detailed, hands-on review (by Frank Bouldin) of the Olivetti PR-2300 Ink Jet Printer currently being offered by DAK Industries for \$199 plus shipping.

It also contained a 1-page newsletter from the Dallas Timex User Group. Contact for this group is Julie Barrett, 2624 E. Park Blvd., Plano, Texas 75074. Ms. Barrett reports interesting things going on at AERCO

of Austin, Texas with reference to a Disk Interface for the 2068.

Way out west in Abilene, Texas that is, a new group is trying to form. Readers in that area should contact Chris Nystrom, 609 E.N. 18th, Abilene, Texas 79601. Chris has done a commendable job with his Newsletter #1.

Those writing to the above sources should at least inclose a SASE, and those who are able might offer a cash contribution to further the good work.

Reader input means a lot to the success of any publication or writer. Just to give a few examples, reader input has informed me that User Groups are subscribing to British magazines, that the famous "microdrives" have been imported and run on the 2068 with a "Spectrum Emulator" (don't ask which one, I don't know; send a SASE to Ray Perschy, 110 V. The Village #503, Redondo Beach, California 90277), that D. Lipinski Software (2737 Susquehanna Road, Roslyn, Pennsylvania 19001) has some great programs.

Now if someone will just update me on the current status of the Sinclair QL, send me John Brown Jr's address, and tell me what "STARTEXT" is... TSH

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REVIEWS FOR THE NON-PROGRAMMER #6

Disk

By A. Gindin

This author has remained a non-programmer for several reasons: It seems like a lot of work. Most problems have been solved and it seemed easier to use someone else's programs. The programs as written seemed uncomprehensible. However, the temptation has always been there to learn the art and I have actually made some minor modifications in some programs e.g. to get the program to LPRINT.

Now there is some hope for those of us who share the above hangups. A series of articles entitled "Structured Programming in BASIC" by Arthur Luehrmann, has appeared in five recent issues of Creative Computing (May-Oct. 84). He is on the ANSI Committee X352 developing ANSI Minimal Basic which is available from ANSI, 1430 Broadway, N.Y., N.Y. 10018. He has also written a book Computer Literacy-A Hands on Approach with Peckham (McGraw Hill) for students.

As described, at least in print, it seems extremely easy. One starts by stating the aims of the program at the onset in English as a REM statement which he calls a "Top down approach." As each aim of the programmer is encountered it becomes a GOSUB to a subroutine. In turn, one only needs three types of subroutines in "blocks": 1. The Action Block e.g. INPUT, LET or PRINT. 2. The LOOP block with DO and IF...THEN. for repetitive calculations. 3. The Branch Block with IF...THEN and FALSE AND TRUE. There then should be a straight sequence of these blocks and no wild GOTOs all over the program. That's all there is to it. All flow charts are eliminated. Now all we need are some ready made blocks. Fortunately much of this has been done for us. Most programs are spaghetti and hard to follow but occasionally one can find a block in a well-written program. In addition there are books of blocks: one from McGraw-Hill is called GOSUBS (100 subroutines for \$9.95) and the Ideabook from Creative Computing for \$8.95 (50 programs), both for the TS 1000.

For the future, ANSI Basic, a super set of Minimal Basic, will even eliminate the line numbers and substitute CALL which will direct the program to the specific word that identifies the block.

Murphy said something about nothing being as simple as it appears. Hopefully these methods will help some of us add to our control of the computer. TSH

CASSETTE LOADING HINTS FOR TIMEX COMPUTERS

By: John Bell

The most annoying problem I have had with my T/S 1000 is not being able to load programs. If you have tried all the suggestions in the manual and still have problems, try the following techniques. Using them I get a good load on the first try nine times out of ten.

-Save your programs on a quality tape. Sixty-nine cent specials may work, but why take chances? I use any quality 45 minute normal bias cassette tape. (Maxell, Memorex, TDK, etc..)

-Try another tape recorder. Some really do work better than others. I've found the pocket size machines usually won't work.

-Keep the cassette recorder clean and demagnetized. A cassette type demagnetizer works fine. Clean the tape heads and pinch roller by hand. Perform these procedures every five to ten hours operating time.

-Run the tape recorder off batteries. Don't use Nickel-cadmium rechargeable cells. They only put out 1.2 volts compared to 1.5 for regular batteries. That's over a 1 volt drop for the average tape recorder!

-Keep the computer, tape recorder and cassette tapes at least two feet away from the television, especially when you turn it on. Electrical fields from the set can magnetize tape heads and change bit patterns on program tapes.

-The use of a tape loading device might help. See T/S HORIZONS, issue 3 for plans, or one can be purchased commercially from several sources. TSH

PROGRAMMING TIPS

By: Mather White

Here is an article of immediate practical use if you have ever tried to type in long REM lines for machine code or wanted password protection for your programs. Also included are points on how to reduce SAVE/LOAD time, hidden program lines, PRINTing and COPYing lines 22 and 23, how to find the PRINT coordinates, and "custom" error codes.

Making Your REM Lines 10,000 Characters long...Instantly

If you have ever tried to use a REM line for machine code storage or for a data base (to save memory or to avoid slow printing - as mentioned later in this article), you know what a hassle it is to enter those long lines. Here is a much easier way:

```
1 REM 5RND=5555
```

The keys after 1 REM are 5, graphic shifted P, the token RND, graphic shifted 1, three graphic 5's, graphic 2, graphic shifted D.

Now decide how much space in bytes you want in your REM line, and enter this in the immediate mode:

```
LET A=spaces you want-9
POKE 16520,195
POKE 16519,INT(A/256)
POKE 16518,A-256*PEEK 16519
POKE 16512,INT((A+11)/256)
POKE 16511,A+11-256*PEEK 16512
RAND USR 16514
```

Now you have your 10,000 character REM line (or whatever). You can use the space from 16514 to 16513 + whatever your length was for the M.C. or database. Since you will be putting valuable information in this REM line, you may want to prevent accidental deletion by changing the line number to a zero with a POKE 16510, 0.

Password Protection

It's fun to have passwords on your programs (so they'll be "sophisticated"). Here's a short password program protection routine:

1. POKE 16509,118
2. SAVE "program name"
3. PRINT "PASSWORD?"
4. INPUT I\$
5. If I\$<>"your password" THEN NEW
6. POKE 16509,0
7. REM rest of program

If someone decides to break the password protection by entering STOP at the INPUT, or by pressing BREAK, the computer will deny them use of the program (It will be as though it had disappeared).

Hidden Program Lines

If you want to remove lines from use (but not from memory), try POKE 16509,118. Any lines you've entered before this will not be noticed by the computer. They will reside between any program you enter later and the display file, and will not be used except by your POKE statements into that area.

Reducing SAVE/LOAD Time

I know how time consuming it is to LOAD or SAVE an array or display picture (an empty picture alone takes about 20 seconds). Here are some tips on reducing that time:

1. Get rid of unnecessary program lines. Use subroutines for repeated lines. Delete any REM lines you don't need.
2. If you don't need the variables you already have, CLEAR them. You will be able to do this with most programs (although you won't be able to do this with the ones that don't allow you to use RUN).
3. If you are using a 16k RAMPACK and do not need to keep the display picture, collapse it with POKE 16389,0. Again, you will be able to do this with most programs (exceptions are all programs, where you want to save your

drawing). If the program uses a large array and is self-RUNning, you will want to add a POKE 16389,128 line and a CLS line after the SAVE line to avoid slow PRINTing.

PRINTing on the Bottom Two Lines

It sure would be nice to be able to PRINT on all the lines of the screen, wouldn't it? Well, now you can! Use this in your programs:

(line number) POKE 16418,0 to turn on ability to PRINT on lines 22 and 23

There is a limitation however. Before using SCROLL or INPUT, you must turn the extra PRINTing ability off with

(line number) POKE 16418,2

You may then turn the extra PRINTing ability back on, but INPUT and SCROLL will have erased the bottom two lines, so it's best to only use this technique in a part of the program where SCROLL and INPUT aren't used.

COPYing the Whole Screen

After PRINTing on lines 22 and 23, you may want to COPY the entire screen to your printer, which is useful for a long, continuous printed report or list. Use:

1 REM -/LN ?TAN

The keys after 1 REM are shifted J, shifted V, the token LN, shifted C, graphic shifted A, the token TAN.

In the immediate mode:

POKE 16517,107

Then any time you want to COPY the whole screen in your programs, use:

(line number) RAND USR 16514

Finding the PRINT coordinates

In some of your programs, such as matrix input or array listings, you will need to know the coordinates of the PRINT position to avoid an error stop. Here's how to find them:

33-PEEK 16441 tells you the column number
24-PEEK 16442 tells you the line number

"Custom" Errors

In some programs, you may want to stop the program to alert the user to an error he has made. You can use any of the T/S 1000's characters you want, such as E for "error". At the desired stop point in the program:

(line number) POKE 16384, character code-1

Use only real character codes. You may use any letters, numbers, or graphics. The line number of the report code will be the POKE line number.

Have fun with these tips, and write me with any suggestions or ideas you may have.

Mather White
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PROGRAM "HEADER" LISTING

By: Bill Ferrebee

If you are like me, you like to have backup copies of your T/S programs to use on a regular basis. I put the master copies of my tapes away so that they don't get damaged.

Some programs are easy to backup. If they are completely in BASIC, you simply break the program, and look through the listing to see where they Autorun from. Many times the SAVE routine is imbedded right into the program. Then all you have to do is prepare your recorder and type GOTO XXX (the line number of the SAVE routine).

Other times, the program is loaded in several parts. Usually the order is:

- 1) Loader Program - in BASIC
- 2) Cover Screen - Saved as SCREEN\$
- 3) Main body of program - in BASIC or Mach Code

These too can be saved if you know the procedure. Start by typing MERGE "", and load the tape. When you get the condition code in the lower left screen, stop the tape and LIST. You will then see the Loader listing and may be able to figure out how to save the rest of the program from there.

However, many programmers use techniques to "mask" the vital information you may need to save a program properly. Like what line is the Autorun line in a BASIC program? Or what is the Starting Address and Data Length for a Machine Code section?

Well, with the "Header" program listing enclosed, you can back up almost ANY TS2068 program you have. By law, you are permitted to make backup for your personal use. (Selling them is another story!!!)

Of all of the programs I have, only one would not work with "Header". And it was from England, so I guess there might be a program floating around somewhere to do the same for Spectrum software...

After typing the "Header" listing in, save it to tape with:

SAVE "header" LINE 9970

Make several copies on one tape, as it is very short. (How about making a second copy to put away with your Master tapes?!?)

Here is the procedure to using "Header":

- 1) LOAD "header" into the computer. When it finishes loading, stop the tape.
- 2) Place the program tape you want to examine into the recorder and press PLAY.
- 3) As soon as the header on the program tape is read, the program will tell you the information you need:
 - A) If the section is in BASIC, it will give you the Title, the Data Length, and the Auto Start Line.
 - B) If the section is in MACHINE CODE, the program will give you the Data Length and the Starting Address. If the Data Length = 6912 and the Starting Address = 16384, this section is a SCREEN\$.
- 4) Make sure you write the information down as soon as it appears on the screen.
- 5) After making note of the information, press any key and press PLAY to read the next section. The same info you just wrote down will appear again, so press any key when it appears again to clear the screen. Repeat Steps 2-4 for the entire program.
- 6) After collecting the information from the entire program, rewind the tape and reset the machine. Using the information you have, proceed to make a backup copy of the program.

Remember when saving a MACHINE CODE section, use the command:

SAVE "name" CODE aaaa, bbbb

aaaa: the Starting Address
bbbb: the Data Length

(This program is provided courtesy of the T/S Users Group in Memphis, Tennessee. "Header" is a public-domain program, so feel free to make copies for your friends.)

```

9970>CLEAR 63999: FOR a=64000 TO
64052: READ b: POKE a,b: NEXT a
9971 CLEAR 63999: FOR a=64000 TO
64052: READ b: POKE a,b: NEXT a
9975 CLS : PRINT "Load a
tape and press PLAY"
9980 DATA 55,62,0,221,33,60,250,
17,17,0,205,14,250,201,33,252,0,
205,34,250,58,33,250,211,244,219,
255
9981 DATA 203,191,211,255,251,20
1,0,243,245,219,255,203,255,211,
255,219,244,50,33,250,62,1,211,2
44,241,233
9982 RANDOMIZE USR 64000
9983 LET a=64060: LET b=PEEK a:
LET s=b
9984 IF b=0 THEN PRINT "PROGRAM:
"
9985 IF b=1 THEN PRINT "NUMERIC
ARRAY: "
9986 IF b=2 THEN PRINT "CHARACTE
R ARRAY: "
9987 IF b=3 THEN PRINT "BYTES: "
9988 FOR a=64061 TO 64070: LET b
=PEEK a: PRINT CHR$ b;: NEXT a:
PRINT
9989 LET b=PEEK a+256+PEEK (a+1)
: PRINT "DATA LENGTH: ";b
9990 LET a=a+2: LET b=PEEK a+256
+PEEK (a+1): IF b=3 THEN PRINT "
START ADDRESS: ";b
9991 IF b<0 THEN GO TO 9995
9992 IF b<1 OR b>9999 THEN GO TO
9994
9993 PRINT "AUTO START AT: ";b
9994 LET a=a+2: LET b=PEEK a+256
+PEEK (a+1): PRINT "PROG/VARS LE
NGTH: ";b
9995 PRINT "For another tape
, touch ANY KEY"
9996 PAUSE 0: GO TO 9975

```

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In Touch With The World No. 4

By: Bill Ferrebee
MOUNTAINEER SOFTWARE

Hello again, and as you prepare for this festive time of year, I am back to provide you with some information that will help you enjoy your Telecomputing through the Holiday Season.

First, let me be among the first to wish you only the happiest of Holidays. May this time of year bring the best to all in your family.

Now on to our real business. Yes, I finally received my copy of MTERM II. Yes, the Operations Manual is among the poorest excuses of documentation I have seen yet. And yes, the software DOES WORK.

As you may well know, the software itself was designed by Micro-Systems Software of Boca Raton, Florida. They were contracted by Timex to develop the software for them. When Timex went under, M-S sold the package to Westridge, a subsidiary of Anchor.

Anchor told Micro-Systems that they would not need them to provide the documentation for the software. HOW WRONG! The software does indeed work if you know how to use it. (I have broken the procedure down into a checklist in an adjoining article.)

Word has it that Anchor, with the help of Micro-Systems, will be rewriting the Manual, and will provide owners of MTERM II with copies when finished. Keep checking this column for more on this subject.

Next, I just received a BYTE-BACK modem, and will be working with it on both my 1000 & 2068. BYTE-BACK finally released their new software (SpectraTERM) for the 2068. Be looking for a review in the January issue.

I have been getting cards and letters from many of you. I love hearing from you, and will try to answer some questions for you now:

1) As of yet, no one has come out with a BBS program for either the 1000 or the 2068. The main reason is because of the lack of available disk drives for T/S computers. This situation is changing. Also, keep watching for a POSSIBLE cassette-based BBS program in late-Spring. (No promises...I'm gonna try.) If you have any ideas that would help, get in touch with me!

2) There are no accoustic modems available for T/S computers. But, with the use of an RS-232, you may be able to modify one of the available accoustic modems for use.

3) I have yet to try it, but I believe that you CAN Download a program with a BYTE-BACK modem that has been Uploaded with a Westridge.

4) My favorite color is Green...HUH?

Oh well, I hope this answers some questions you may have (I know I probably answered some you could care less about!).

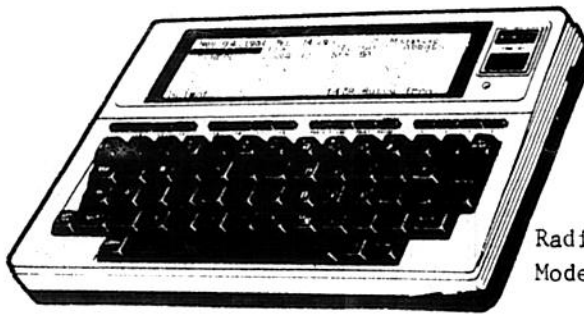
Finally, I want to invite you to try out the RIVER CITIES SMART BBS. If you haven't called yet, you are missing the largest T/S SIG in the U.S. Read the ad in this issue on details on our FREE WEEKEND!!!

In closing, I hope you are enjoying this column, and will write me with suggestions or comments. My address is:

Bill Ferrebee
MOUNTAINEER SOFTWARE
115 North 7th Avenue
Paden City, West Virginia 26159

Until next month...Happy (New Year) Telecommunicating!!!
TSH

TELECOMMUNICATIONS



Timex/Sinclair
1000

VS



Radio Shack
Model 100

By Larry Desch

(Editor's Note: The following article was written by Larry Desch for the newsletter of his local KAYPRO user group in Iowa City, and is reprinted here with the gracious permission of the author.)

AN INEXPENSIVE (really!!) and PORTABLE (truly!!) COMPUTER

What computer has 16K, expandable to 64K, weighs in at less than 5 pounds and has a small "footprint"? Am I talking about the Radio Shack Model 100? No, even though I would like to have one. How about the Gavilan? (What a weird name for a computer -- sounds like a name of a comedian.)

How about some more information -- the total cost is less than \$200 and the major component of the equipment is no longer available unless you can get one used or from England or Canada. The United State dealer decided to bail out despite selling 140,000 units of a newer model only since November 1983.

Give up?? Well, you may question my sanity, but, besides my Kaypro II, I also have a Timex/Sinclair 1000 I have added some components to make it a very useful system and one that I don't mind carrying with me when I travel.

Bear with me now, I realize that this is a newsletter for Osborne and Kaypro owners, but I thought that possibly I could inspire some

people to also look at their computers as what a computer truly is -- an electronic device and one that could be altered to do things that they may have been thought impossible to do. You may not believe this but your computer could be hooked up to other electronic devices to control lights and your furnace in your home while at the same time predicting what your next gas and electric bill will be.

Now back to my "version" of the RS Model 100. What I started out with was the basic TS 1000 computer which at Christmas was being sold at K-Mart for \$30. (Now you have to write off to a mail-order house to get one of the few remaining units.) The TS 1500 is more readily available now for \$75. Next purchase was a keyboard kit for \$70, actually "kit" is a misnomer since all I had to do was take out the printed circuit board from the TS 1000 and plug it into the connector in the keyboard assembly. This took about a half-hour or so. I also bought an assembled 16k RAM module rather than a kit since the kit was only \$7 cheaper. The most important part of my components other than the computer itself was a RS-232 module that I made from a kit. The cost of this was \$60 and it was relatively easy to build but not for someone who has never soldered printed circuits before. The assembled version costs about \$20 more. I already had a modem that I could use with this RS 232 module (since that is what my Kaypro uses).

MTERM II Tutorial
By Bill Ferrebee
MOUNTAINEER SOFTWARE

Part I - Uploading/Downloading

This will be a short series in the proper use of the MTERM II Telecommunications software package for the Westridge 2050 modem/TS 2068 computer combination.

In this series, I hope to unravel the mystery that seems to have arisen since the release of MTERM II. I have been assured by Micro-Systems Software, developer of MTERM II, that the software itself is 100% bug-free.

The problem lies in the Instruction Manual that Westridge (Anchor) wrote to accompany MTERM II. A revised Manual is said to be on its way.

But until it arrives, I hope to provide you with enough instruction to use MTERM II a little better.

The main question that arises when talking about MTERM is:

"How do you Upload or Download with it?"

The following is step-by-step procedures in the proper use of the Upload/Download options:

UPLOADING PROGRAMS

1) After loading MTERM II, make sure your PARAMETERS are set properly. These are the Duplex, Word length, Stop bit, and Parity settings. They normally should be:

DUP: Full

WORD: 8

STOP: 1

PRTY: None

To change these settings, use the "S" command on the Main Menu. These settings ARE explained briefly on pages 3-5 of the Manual.

2) Next, press "E" to Exit to BASIC. You will see the familiar flashing "K" cursor.
3) Load your BASIC program into the machine as normal. Notice I said BASIC. For now, make sure all programs you load into the buffer are 100% BASIC. It takes a little more complex routine to load Machine Code programs, and we will discuss the procedure in a future issue.

I recommend that you MERGE "" when loading the program. This is because if the program autoruns, it will be harder to break to get back into the terminal program.

4) Once the program is loaded, ENTER:

```
PRINT USR 54016
```

This puts you back into the MTERM II program.

5) Next, press ENTER to return to the Main Menu. Press "D" to access the Data Buffer Menu.

6) Press "X" until the CON: setting on the bottom of the screen shows the word "HEX". This means HEXidecimal, which is the format that you will transmit your program.

7) Press ENTER until you get to the Main Menu, and dial the BBS you want to send your program to, using the "A" command.

8) Once you have established contact with the BBS, and have gone to the Uploading section, find out what the transmit prompt is. On the RIVER CITIES SMART BBS, it is a " " symbol.

9) After finding out the proper prompt, press CAPS SHIFT and "8" to get back to the Main Menu. You will still be in contact with the BBS.

10) Press "D: again to get to the Data Buffer Menu. Next, press "T" to get into the Transmit Buffer sequence.

11) The program will ask for the prompt character. Input the prompt you got in step 8, and press ENTER. Press ENTER for the next two questions on the screen as you do not need to answer them.

12) At this point, the buffer should be "open" and ready to transmit. Press ENTER until you return to the Terminal mode. You

will see a lot of numbers and letters scrolling across the screen. This is your program converted into hexadecimal. Once the program is finished, the buffer will close, and you are done.

DOWNLOADING PROGRAMS

This procedure is a little easier to do.

- 1) Follow Step 1 as above.
- 2) Before calling the BBS, make sure your Data Buffer is empty. To clear it, press "D" to enter the Data Buffer Menu. Then press "E" to erase the buffer. Make sure the CON: is set at HEX. Then press ENTER to get back to the Main Menu.
- 3) Dial the BBS in the same manner as in Step 7 above.
- 4) When you are on the BBS, go to the Downloading Section, and follow the instructions there. In most cases, the board will take care of opening and closing the buffer for you.
- 5) After the buffer has been closed, terminate your call and return to the Main Menu.
- 6) Press "E" to Exit to BASIC, and the program you Downloaded should be there, ready to run or save to tape.
- 7) To return to MTERM II again, simply enter:

PRINT USR 54016

Well, that's all there is to Uploading or Downloading a BASIC program with MTERM II. In the next issue, I will tackle the task of Uploading and Downloading TEXT FILES.

Until then...HAPPY TELECOMMUNICATING! TSH

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BIRTHDAY RECORD/PERPETUAL CALENDAR-same as 2K Calendar, but allows storage of up to 150 birthdays, etc. on tape. (16K RAM) \$6.95


HI SPEED GRAPHICS-Add lightning-fast, vector-defined graphics, 4 direction scrolls, and much more! 100% machine-code.(16K RAM) \$7.95

JACKPOT DICE-great fun for the whole family. Players decide to keep points or risk for more. Play against the computer or up to 4 players. (16K RAM) \$5.95

*****Satisfaction Guaranteed*****

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LET'S COMPARE WITH THE RS MODEL 100 --

Timex-Sinclair System	Radio Shack Model 100
2K up to 64K	8K to 24K
24 line by 32 Char	6 line by 40 Char
RS 232 added	RS 232 built in
modem added	modem built in
full keyboard added	full keyboard
AC needed(more or less)	Battery power (for 5-6 hrs)
Cost -- \$250 for 16K (including modem)	Cost -- \$500 for 8K

So what is the catch? Actually there are two catches. To use the TS 1000 system you need to be near a TV (which is hard not to do in our society) -- any TV will do just fine. The other is that the TS 1000 is not quite as portable. If you are handy with electronics it is easy to build a portable battery pack that will run the TS 1000 and a small black and white TV (3" to 5" screen) -- there are several articles that give easy to follow plans. Or you could do like I have and make a simple adapter so that both the TV and the TS 1000 can be run on a 12 volt car battery for a long, long time or indefinitely if you run it in your car and periodically start the engine to charge the battery. This last use is something that I have tried with great success. I don't think the "ultimate" portability of the RS Model 100 is that big of an issue -- how many people will really feel like using the Model 100 while they are in a crowded airplane or in a taxicab?? Most likely they would use it in a private area, such as their hotel room, with a TV several feet away. Get my point?

I have found my concoction to be a useful and versatile system (I can still play games like Frogger!). Most importantly, it meets my needs for something on which I can type my notes from a meeting, save the text on a cassette tape and then when I get home, download it to another computer for editing and improving the format.

One of these days the price on a Model 100 will be reduced to less than \$300 and I will probably buy one and retire my TS 1000. Unfortunately, I will probably miss playing games while I'm "on the road" and occasionally long for my "toy" computer. TSH



First Annual T-S

T-S Horizons AWARD OF MERIT

Here we recognize the writers who have supported TSH in the last year.

Bill Ferrebee, Tex Faucette, Doug Gangi, Gordon Young, Paul Hunter, Ken Lewis, Bill Johnson, Mather White, John Marion, Art Gindin, and all the rest. These people have put in a lot of hours and often their main compensation was the knowledge that what they were doing would be of some benefit to Timex Sinclair users.

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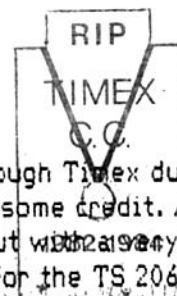
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These awards go to 5 individuals or companies who have performed above and beyond the call of duty.

1. Marty Dubay of Games to Learn By for securing the rights to most of Timex's software, so that we can all be assured a reliable supply of programs like VU-3D, VU-Calc, Flight Simulator, and many more.
2. Howard W. Sams for responding to appeals from Timex users to publish their TS 2068 Intermediate/Advanced Guide after all.
3. Doug Dewey for his Spectrum emulator.
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5. Anchor, Inc., for releasing their Westridge 2050 modem despite the withdrawal of Timex.

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Best USER GROUP/Best NEWSLETTER Awards

- Triangle Sinclair User Group-Doug Dewey, Ed.
- Capitol Area Timex Sinclair(C.A.T.S.)-Jules Gesang, Ed.
- Bay Area Timex Sinclair User Groups/Timelinez

Best new user group/newsletter:

- Long Island Timex Sinclair(L.I.S.T.)-Paul Donnelly, Ed.

Most promising new newsletter:

- Phoenix User Group-Doug Gangi, Ed.

Best special interest group/newsletter:

- QZX



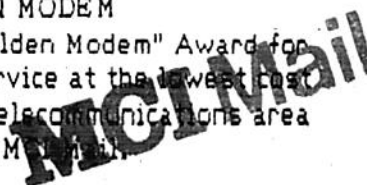
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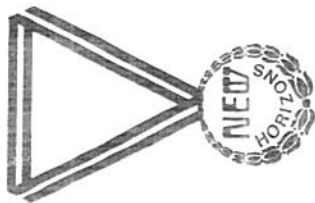
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The "Golden Modem" Award for best service at the lowest cost in the telecommunications area goes to MCI Mail.

HOW
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SYNC
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MTERM II

The award for "Worst Software Documentation" goes to whoever is responsible for the documentation for MTerm II.

We bestow the "Bleeper and Practical Joke" award to Michael Wilson and TS Computing respectively. (See TSH #8 and 9 if you're confused.)

InfoWEIRD

DOORSTOP COMPUTERS
The "InfoWeird" Award for Low Blow of the Year goes to John Dvorak, columnist for InfoWorld magazine, for suggesting that the best use for a TS1000 is as a doorstop. (Actually John, our tests indicate that an Apple or an IBM generally makes a much better doorstop. Try it sometime.)



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QUANTUM LEAK

To Sinclair Research, Ltd. we bestow the prestigious "Quantum Leak" award in view of reports from England of a multitude of production, shipping, and quality problems concerning the new Sinclair QL. (Hopefully they will work the bugs out on the British before they bring it to the US.)

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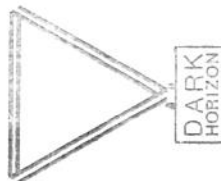
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OUR WISH LIST

- What we at T-S Horizons would like to see in 1985. (Are you listening Santa?)
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 3. A good spreadsheet for the 2068.
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BANK SWITCHING PART 6

Again this month we'll start by reviewing comments and suggestions made by some of you who are building a stacked RAM bank like the one described in this series.

Apparently it was not made clear how the memory management circuit (in Part 3 Figure 2) should be connected to the individual RAM packs. The outputs labelled 16-32K; 32-48K; BANK 0; and BANK 1 are connected directly to the A14 pins on the RAM packs. Remember that the A14 pins were left unconnected when the 16K RAM packs were stacked. All other data, address, and control lines are connected to the expansion bus.

It is important to construct a reasonably stable stack of RAM packs -- the use of card guides mounted on a rigid board is recommended. A set of RAM packs held together by the 22/44 pin connectors alone invites trouble -- slight nudges or wobbles cause frustrating system crashes.

If you do not want to mess around with stacks of RAM packs then construction of one or two dynamic 64K memory boards (see for example John Olinger's article in SQ Summer 1983 page 41) is an excellent alternative. Radio Shack has a printed circuit board made especially for memory IC's (part #276-184; \$1.99).

Some later versions of the Computer Continuum

This program is equally applicable to an ordinary 64K system (Byte-back; Manotech 64K; etc.). Such a system can be viewed as a 32K BASIC system with one 16K bank. So if you have a 64K RAM pack by all means experiment with some of these routines.

The listing is a collection of MC routines, each of which performs some specific function. The main program will call these routines as needed. The modular nature of the program so far makes the individual functions easy to test, modify, and write in the first place.

The listing starts with some system variables. These variables are data and addresses used by the operating system and some space remains for the future. The variables are listed in Figure 2 with brief descriptions.

The collection of routines starts at 8257. Addresses are listed in Figure 3 with abbreviated names and functions. Some may not be obvious at this stage but the examples which follow should make their meaning clearer.

Remaining space in the program is taken up with various character strings which represent prompts and messages to be sent to the screen. The strings and their addresses are shown in Figure 4.

Entry of the machine code is tedious but unavoidable -- it takes about 25 minutes using a routine (in FAST mode) such as:

```
10 PRINT "BANK 1 DIRECTORY"
20 PRINT "NO. NAME .EXT ADDR SIZE"
30 PRINT "-----"
40 PRINT "A: DIRECTORY .DIR:49152:00704;"
50 PRINT "B:"
60 PRINT "C:"
70 PRINT "D:"
80 PRINT "E:"
90 PRINT "F:"
100 PRINT "G:"
110 PRINT "H:"
120 PRINT "I:"
130 PRINT "J:"
140 PRINT "K:"
150 PRINT "L:"
160 PRINT "M:"
170 PRINT "N:"
180 PRINT "O:"
190 PRINT "P:"
200 PRINT "1:SAVE 3:PURGE 5:PACK 7:ROOM"
210 PRINT "2:LOAD 4:RECLAIM 6:BANK 8:QUIT"
220 POKE 8199,0
230 POKE 8200,192
240 RAND USR 8297
```

Now enter FAST, and run the program. The directory is loaded into a bank at address 49152 (see line 230 and 240: $192 \times 256 + 0 = 49152$). Now clear the BASIC system by entering NEW, reset RAMTOP to 49152, then in FAST mode enter RAND USR 8693. The directory will come back into the system and be displayed:

```
BANK 1 DIRECTORY
NO. NAME .EXT ADDR SIZE
-----
A: DIRECTORY .DIR:49152:00704;
B:
C:
D:
E:
F:
G:
H:
I:
J:
K:
L:
M:
N:
O:
1:SAVE 3:PURGE 5:PACK 7:ROOM
2:LOAD 4:RECLAIM 6:BANK 8:QUIT
```

he directory has space for 15 entries.

Some later versions of the Computer Continuum board have the traces reversed with respect to earlier ones. This means that all plug-in boards should be reversed as well. What was the diagram for the component side is now the foil diagram for the circuit side and vice versa.

I do not have any 16K RAM packs left for sale but there are alternative sources -- see the advertisement on page 7 in last month's TSH.

I'm pleased that some readers have built this expanded system successfully and should like to thank those of you who have written for your comments.

A DIRECTORY

This month we will create a directory and examine some of the routines used to manipulate and characterize files. Approximately 760 bytes of the operating system are listed in Figure 1 -- we will complete the listing next month (I hope) and attempt to keep the size to less than 2K.

You will notice that the addresses start at 8192 -- this is simply because the 8-16K region is a convenient place to hold the program. If these addresses conflict with something else in your system then of course the routines can be readdressed. You may wish to put the program (when finished) on EPROM and store system variables in a reserved space above RAMTOP. Alternatively the whole thing can be placed in a REM statement. Note however that the routines are not relocatable without some address changes (although most are straightforward).

```
10 INPUT A
20 INPUT D
30 POKE A, D
40 PRINT A; TAB 6; PEEK A
50 LET A = A + 1
60 GOTO 20
```

Having entered the code it's worth saving just in case of an error which causes a system crash. The code must be moved up into the system in order to do this. A convenient place to put it is in a giant REM statement containing 760 characters. (Don't attempt to insert or delete any line following a long REM statement -- the system will crash). Enter the program:

```
10 REM.....(760 characters)....
20 LET D = 16514
30 FOR N = 8192 TO 8950
40 POKE D, PEEK N
50 LET D = D + 1
60 NEXT N
```

Run in FAST mode and then save on tape. Upon reloading from tape, change line 40 to POKE N, PEEK D, enter FAST, run, and then enter NEW. There are faster ways to do this using machine code routines -- if you're interested please write.

Having entered the machine code the various routines can be tested. We'll do this by stepping through them in much the same way as the main program will when it's written. First enter the program:

```
10 PRINT "BANK 1 DIRECTORY"
20 PRINT "-----"
30 PRINT "NO. NAME .EXT ADDR SIZE"
```

The directory has space for 15 entries. Subdirectories can be added if you wish -- more on this later. Up to 11 characters (any printing character including a space) are allocated for each file name followed by an extension which tells the operating system what kind of file it is. Allowed extensions are:

- DSP or DIR for a display file
- PRG for a program
- VAR for a variables file (data)
- TOT for a total system

You may wish to add other extensions (eg. BIN for a binary file). The directory display, as you have probably noticed, also serves as the menu. Choices are:

- 1: SAVE : move file from system to bank
- 2: LOAD : load file from bank into system
- 3: PURGE : remove a file from the bank
- 4: RECLAIM : delete a portion of the system
- 5: PACK : repack files in a bank
- 6: BANK : change banks
- 7: ROOM : check space available in bank
- 8: QUIT : return to BASIC

Not all options are available yet so for the moment just imagine that you wish to save a file. First enter some addresses to indicate the start and end of the file in the system (the main program will eventually do this automatically).

```
POKE 8195, 35
POKE 8196, 93
POKE 8197, 10
POKE 8198, 103
```

FIGURE 1

8192	0	8254	31	8316	205	8378	15	8440	225	8502	11	8564	14	8626	32
8193	0	8255	33	8317	176	8379	0	8441	205	8503	43	8565	0	8627	78
8194	0	8256	14	8318	33	8380	17	8442	195	8504	46	8566	56	8628	35
8195	35	8257	42	8319	17	8381	37	8443	32	8505	49	8567	46	8629	70
8196	93	8258	5	8320	9	8382	32	8444	35	8506	42	8568	63	8630	201
8197	10	8259	32	8321	64	8383	205	8445	62	8507	51	8569	42	8631	1
8198	103	8260	237	8322	42	8384	107	8446	27	8508	38	8570	14	8632	0
8199	0	8261	91	8323	7	8385	11	8447	190	8509	50	8571	0	8633	9
8200	192	8262	3	8324	32	8386	201	8448	40	8510	42	8572	0	8634	205
8201	0	8263	32	8325	35	8387	237	8449	250	8511	27	8573	0	8635	245
8202	7	8264	183	8326	35	8388	91	8450	62	8512	42	8574	0	8636	8
8203	0	8265	237	8327	237	8389	11	8451	14	8513	61	8575	55	8637	1
8204	12	8266	82	8328	176	8390	32	8452	190	8514	57	8576	52	8638	12
8205	192	8267	68	8329	201	8391	27	8453	32	8515	11	8577	52	8639	0
8206	194	8268	77	8330	0	8392	122	8454	225	8516	14	8578	50	8640	17
8207	179	8269	201	8331	0	8393	179	8455	201	8517	42	8579	0	8641	127
8208	192	8270	205	8332	205	8394	32	8456	205	8518	61	8580	49	8642	33
8209	0	8271	65	8333	174	8395	251	8457	176	8519	42	8581	42	8643	205
8210	0	8272	32	8334	33	8396	201	8458	33	8520	40	8582	43	8644	107
8211	0	8273	42	8335	42	8397	205	8459	42	8521	58	8583	57	8645	11
8212	0	8274	7	8336	12	8398	162	8460	20	8522	57	8584	0	8646	205
8213	0	8275	32	8337	64	8399	32	8461	64	8523	42	8585	20	8647	205
8214	0	8276	113	8338	197	8400	237	8462	43	8524	0	8586	0	8648	33
8215	0	8277	35	8339	229	8401	75	8463	197	8525	56	8587	33	8649	205
8216	0	8278	112	8340	43	8402	9	8464	229	8526	38	8588	147	8650	217
8217	0	8279	35	8341	205	8403	32	8465	205	8527	59	8589	192	8651	33
8218	0	8280	235	8342	158	8404	5	8466	158	8528	42	8590	17	8652	201
8219	0	8281	237	8343	9	8405	5	8467	9	8529	0	8591	32	8653	33
8220	0	8282	176	8344	209	8406	205	8468	209	8530	16	8592	0	8654	255
8221	0	8283	201	8345	193	8407	245	8469	193	8531	56	8593	25	8655	255
8222	0	8284	205	8346	42	8408	8	8470	42	8532	17	8594	62	8656	237
8223	0	8285	187	8347	7	8409	1	8471	7	8533	0	8595	0	8657	91
8224	0	8286	2	8348	32	8410	21	8472	32	8534	52	8596	190	8658	13
8225	0	8287	68	8349	35	8411	0	8473	35	8535	55	8597	32	8659	32
8226	0	8288	77	8350	35	8412	17	8474	35	8536	0	8598	250	8660	27
8227	0	8289	44	8351	237	8413	48	8475	237	8537	38	8599	34	8661	183
8228	0	8290	40	8352	176	8414	33	8476	176	8538	39	8600	15	8662	237
8229	38	8291	248	8353	201	8415	205	8477	201	8539	52	8601	32	8663	82
8230	41	8292	205	8354	33	8416	107	8478	0	8540	55	8602	183	8664	201
8231	41	8293	189	8355	37	8417	11	8479	0	8541	57	8603	237	8665	68
8232	55	8294	7	8356	32	8418	205	8480	0	8542	0	8604	82	8666	77
8233	42	8295	126	8357	6	8419	178	8481	34	8543	16	8605	229	8667	205
8234	56	8296	201	8358	15	8420	32	8482	22	8544	38	8606	205	8668	32
8235	56	8297	42	8359	54	8421	33	8483	64	8545	17	8607	33	8669	21
8236	49	8298	12	8360	22	8422	37	8484	126	8546	14	8608	33	8670	205
8237	46	8299	64	8361	35	8423	32	8485	205	8547	43	8609	225	8671	219
8238	56	8300	237	8362	16	8424	229	8486	217	8548	46	8610	197	8672	21
8239	57	8301	91	8363	251	8425	205	8487	20	8549	49	8611	1	8673	201
8240	27	8302	7	8364	33	8426	92	8488	205	8550	42	8612	6	8674	42
8241	59	8303	32	8365	48	8427	32	8489	167	8551	0	8613	0	8675	15
8242	38	8304	62	8366	32	8428	225	8490	14	8552	56	8614	9	8676	32
8243	55	8305	22	8367	54	8429	71	8491	201	8553	38	8615	205	8677	17
8244	14	8306	35	8368	27	8430	62	8492	56	8554	59	8616	33	8678	16
8245	32	8307	1	8369	201	8431	119	8493	38	8555	42	8617	33	8679	0
8246	37	8308	32	8370	237	8432	184	8494	59	8556	41	8618	225	8680	183
8247	36	8309	0	8371	75	8433	40	8495	42	8557	38	8619	9	8681	237
8248	33	8310	237	8372	9	8434	218	8496	42	8558	41	8620	34	8682	82
8249	34	8311	176	8373	32	8435	112	8497	51	8559	41	8621	13	8683	235
8250	14	8312	61	8374	205	8436	229	8498	57	8560	55	8622	32	8684	33
8251	28	8313	32	8375	245	8437	205	8499	42	8561	42	8623	201	8685	37
8252	30	8314	247	8376	8	8438	178	8500	55	8562	56	8624	42	8686	32
8253	33	8315	201	8377	1	8439	32	8501	0	8563	56	8625	7	8687	1

FIGURE 2 SYSTEM VARIABLES

FILE-START	8195	System address of a designated file or segment of a file
FILE-END	8197	The address of the end of the designated file
STORE-LOC	8199	Storage location of the file in a bank
PRINT-POS	8201	Print position on the screen (line; column)
DELAY	8203	Delay parameter for keyboard (default values 0/12)
FIRST-BYTE	8205	The first free byte in a bank
DIR-ENTRY	8207	Address for the next entry in the directory
DATA-STRING	8229	String containing filename, address, and size

32	8688	28	8750	1	8812	57	8874	0	8890	51	8906	118	8922	201	8938	118
78	8689	0	8751	5	8813	0	8875	57	8891	42	8907	215	8923	62	8939	215
35	8690	237	8752	0	8814	42	8876	52	8892	14	8908	215	8924	118	8940	215
70	8691	176	8753	17	8815	51	8877	0	8893	0	8909	215	8925	215	8941	1
201	8692	201	8754	57	8816	52	8878	56	8894	49	8910	1	8926	215	8942	23
1	8693	237	8755	32	8817	58	8879	38	8895	38	8911	25	8927	1	8943	0
0	8694	91	8756	237	8818	44	8880	59	8896	56	8912	0	8928	30	8944	17
9	8695	12	8757	184	8819	45	8881	42	8897	57	8913	17	8929	0	8945	106
205	8696	64	8758	62	8820	0	8882	43	8898	0	8914	129	8930	17	8946	34
245	8697	42	8759	118	8821	55	8883	46	8899	49	8915	34	8931	69	8947	205
8	8698	7	8760	215	8822	52	8884	55	8900	46	8916	205	8932	33	8948	107
1	8699	32	8761	215	8823	52	8885	56	8901	51	8917	107	8933	205	8949	11
12	8700	62	8762	1	8824	50	8886	57	8902	42	8918	11	8934	107	8950	201
0	8701	22	8763	9	8825	0	8887	0	8903	0	8919	205	8935	11		
17	8702	19	8764	0	8826	46	8888	49	8904	0	8920	187	8936	201		
127	8703	1	8765	17	8827	51	8889	46	8905	62	8921	2	8937	62		
33	8704	32	8766	118	8828	0										
205	8705	0	8767	33	8829	39										
107	8706	237	8768	205	8830	38										
11	8707	176	8769	107	8831	51										
205	8708	61	8770	11	8832	48										
205	8709	32	8771	205	8833	53										
33	8710	247	8772	65	8834	55										
205	8711	201	8773	32	8835	42										
217	8712	62	8774	205	8836	56										
33	8713	118	8775	219	8837	56										
201	8714	215	8776	33	8838	0										
33	8715	215	8777	58	8839	38										
255	8716	215	8778	57	8840	51										
255	8717	1	8779	64	8841	62										
237	8718	10	8780	14	8842	0										
91	8719	0	8781	19	8843	48										
13	8720	17	8782	145	8844	42										
32	8721	99	8783	71	8845	62										
27	8722	33	8784	62	8846	0										
183	8723	205	8785	5	8847	57										
237	8724	107	8786	144	8848	52										
82	8725	11	8787	33	8849	0										
201	8726	62	8788	59	8850	40										
68	8727	118	8789	32	8851	52										
77	8728	215	8790	54	8852	51										
205	8729	215	8791	28	8853	57										
32	8730	1	8792	35	8854	46										
21	8731	9	8793	16	8855	51										
205	8732	0	8794	251	8856	58										
219	8733	17	8795	17	8857	42										
21	8734	109	8796	63	8858	42										
201	8735	33	8797	32	8859	51										
42	8736	205	8798	6	8860	57										
15	8737	107	8799	0	8861	42										
32	8738	11	8800	79	8862	55										
17	8739	237	8801	42	8863	0										
16	8740	75	8802	14	8864	49										
0	8741	13	8803	64	8865	46										
183	8742	32	8804	43	8866	51										
237	8743	205	8805	237	8867	42										
82	8744	219	8806	184	8868	0										
235	8745	33	8807	201	8869	55										
33	8746	42	8808	0	8870	38										
37	8747	14	8809	255	8871	51										
32	8748	64	8810	51	8872	44										
1	8749	43	8811	52	8873	42										

FIGURE 4 CHARACTER STRINGS

8492 SAVE
8496 ENTER "FILENAME.EXT":
8517 EXECUTE SAVE (S) OR ABORT (A):
8547 FILE SAVED
8557 ADDRESS:
8566 SIZE:
8575 ROOM LEFT =
8810 NOT ENOUGH ROOM IN BANK
8833 PRESS ANY KEY TO CONTINUE
8858 ENTER LINE RANGE TO SAVE
8882 FROM LINE:
8893 TO LINE:

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Now let's see how much space is available in the bank. Enter RAND USR 8587 and then enter PRINT PEEK 8205 + 256*PEEK 8206 -- the result is 49856. This number represents the first available byte in the bank after the space taken by the directory file (ie 49152 + 704 = 49856). Now enter RAND USR 8631 -- the result is 15680. This number is the space available (ie. 65536 - 49856 = 15680 bytes).

Now let's enter the name of the file. Suppose the name is ADDRESSLIST and that it's a data file. Enter SLOW and then enter RAND USR 8397. Follow the instructions on the screen and enter the name with the extension VAR. If you make a mistake then press the delete key to start over (try it anyway). If the debounce period is too short then increase the delay parameter in 8203 from 12 to a higher number (16 or 20). The routine automatically ends with the last character. As we'll see later, the name is stored in the data string at address 8229.

The main program at this point will ask for confirmation. You can test the string printing routine by entering RAND USR 8923.

If the file is a program file, then the system will ask for starting and ending line numbers. The response ALL will result in the entire program in the system being saved. The size of the file must also be checked to see if it will fit.

Now enter RAND USR 8712. The address and size of the file is calculated and printed (the file, being an imaginary one in this test, is not saved). To illustrate the data now stored in the data-string at 8229 enter the program below and run it. Note that the size is now right justified in its field with leading zeros.

```
10 FOR N=8229 TO 8256
20 PRINT CHR$(PEEK N);
30 NEXT N
```

ADDRESSLIST.VAR:49856:02535:

Now let's put the data into the directory and have a look at it. So:

RAND USR 8674

RAND USR 8693

FIGURE 3 MEMORY MAP

8257	FILE-SIZE	Determines size of a file in the system
8270	MOVOUT	Moves a file from system to bank
8284	KEYBOARD	Scans keyboard and puts character code in A
8297	DSP-OUT	Moves display file from system to bank
8316	TOT-IN	Loads entire system from bank
8332	PRG-IN	Loads a program into system from bank
8354	CLR-NAMESTR	Clears the name-string buffer
8370	PRT-NAMESTR	Prints the name-string buffer
8387	TIMEOUT	Delay loop for keyboard debounce
8397	INP-NAMESTR	Inputs name-string from keyboard
8456	VAR-IN	Loads variables file from bank
8481	STR-TO-BC	Finds value of numeric string
8587	FIND-BANKEND	Finds first free byte in bank
8624	SIZE-TO-BC	Puts size of stored file into BC
8631	PRT-ROOM	Prints space available in bank
8653	ROOM-LEFT	Calculates space available in bank
8665	PRINT-IT-1	Prints value in HL
8667	PRINT-IT-2	Prints value in BC
8674	ENTER-NAMESTR	Puts data string into directory
8693	DSP-IN	Loads display file into system
8712	PRT-ADDR/SIZE	Prints bank file address and size
8905	PRT-PROMPT	Prints prompt message on screen
8923	PRT-CONFIRM	Prints confirmation request
8937	PRT-OVERFLOW	Prints overflow message

The directory is now:

BANK 1 DIRECTORY

```
=====
NO.  NAME      .EXT  ADDR  SIZE
---  ---      -
A:  DIRECTORY  .DIR:49152:00704:
B:  ADDRESSLIST.VAR:49856:02535:
C:
D:
E:
F:
G:
H:
I:
J:
K:
L:
M:
N:
O:
=====
1:SAVE  3:PURGE  5:PACK  7:ROOM
2:LOAD  4:RECLAIM 6:BANK  8:QUIT
```

If you now call the ROOM routine at 8631: RAND USR 8631, you will see that the space left in the bank has been reduced to 13145 (the original 15680 less the size of the new file 2535). We'll continue next month.

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BANNER
For The TS 2068
By Christopher Raynak

This is a short program to print long banners featuring large characters on the 2040 printer. Unlike some other banner programs, you do not have to type DATA statements that contain each character's dot makeup. This program looks directly into the ROM for the dot patterns. The 2068 stores each scan line of dots as a single decimal number. This is unlike the TS 1000 which its dot patterns as binary 1's and 0's. In the 2068 ROM they start at address 15359. This program works with all characters except inverse and user defined and regular graphics.

```

1 DIM B$(8,8)
2 PAPER 0: BORDER 0: INK 7: C
L3
3 PRINT AT 10,4:"Banner by Ch
4 PAUSE 300
5 PAPER 1: BORDER 1: CLS
6 PRINT "When entering your m
7 PRINT "essages you must remember that y
8 PRINT "ou are limited to 32 characters
9 PRINT "Also, you cannot us
10 PRINT "e user def. graphics or regular
11 PRINT "graphics for banners." "Please
12 PRINT "select one of the letter sizes f
13 PRINT "rom below."
14 PAPER 2: PRINT "
15 PRINT "1) 3x8" "2) 15x15"
16 PRINT "3) 32x32" INPUT "Your selecti
17 ON?": CLS
18 PRINT "Please enter your me
19 INPUT C$: IF LEN C$>32 THEN
20 LET C$=C$(1 TO 32)
21 PAPER 3: PRINT AT 8,0:"Your
22 PRINT "message is being processed." P
23 PAPER 1
24 FOR Z=1 TO LEN C$: PRINT AT
25 10,Z-1,C$(Z): LET L=15359+(CODE
26 C$(Z)*3)
27 REM Finds address of first
28 REM scan line.
29 REM *****
30 REM Converts decimal #
31 REM of the scan line of
32 REM corresponding character
33 REM in the ROM to binary.
34 REM *****
35 FOR X=1 TO 8
36 LET L=L+1: LET D=PEEK L
37 FOR Y=1 TO 8
38 LET B$(X,Y)=CHR$(CODE "0
39 +INT (D/2))
40 LET D=INT (D/2)
41 NEXT Y
42 NEXT X
43 PRINT A$=""
44 REM
45 REM Rotates later 90
46 REM degrees to the right.
47 REM *****
48 FOR X=1 TO 8
49 FOR Y=3 TO 1 STEP -1
50 IF B$(Y,X)="1" THEN GO TO 4
51 B$(X,Y)=B$(Y,X)
52 B$(Y,X)=B$(X,Y)
53 NEXT Y
54 NEXT X
55 GO TO 48
56 IF B$(X,Y)="1" THEN LET A$=A$+"
57 B$(X,Y)=B$(Y,X)
58 B$(Y,X)=B$(X,Y)
59 NEXT Y
60 NEXT X
61 PRINT A$
62 REM
63 Rotates later 90
64 degrees to the right.
65 *****
66 FOR X=1 TO 8
67 FOR Y=3 TO 1 STEP -1
68 IF B$(Y,X)="1" THEN GO TO 4
69 B$(X,Y)=B$(Y,X)
70 B$(Y,X)=B$(X,Y)
71 NEXT Y
72 NEXT X
73 GO TO 66
74 IF B$(X,Y)="1" THEN LET A$=A$+"
75 B$(X,Y)=B$(Y,X)
76 B$(Y,X)=B$(X,Y)
77 NEXT Y
78 NEXT X
79 GO TO 74
80 NEXT Y

```

```

491 FLASH 1: INK 0: PAPER 7: PR
INT AT 12,3:"**PRINTER IN OPERAT
ION**" FLASH 0
492 IF S=1 THEN LPRINT A$
493 IF S=2 THEN LPRINT A$;A$
494 IF S=3 THEN LPRINT A$;A$;A$
5001 INK 7: PAPER 1: PRINT AT 12
5002 LET A$=""
5010 NEXT X
5020 NEXT Z
5030 PRINT AT 13,0:"Would you li
5040 ke to print another message?": I
5050 NPUT A$: IF A$(1)="N" OR A$(1)="
5060 n" THEN GO TO 1000
5070 INPUT "Same letter size?": A
5080 $: IF A$(1)="N" OR A$(1)="n" THE
5090 N CLS: GO TO 3
5100 CLS: GO TO 10
1000 REM *****
1010 REM Memory Used=2040 bytes*
1020 REM *****

```

BANNER 1000
By John Marion

The purpose of this program is to print out banners on your Timex printer using your ZX81 or T/S 1000. After typing in and running, you will be instructed to "ENTER YOUR MESSAGE TO PRINT". Now enter your message and press return. Next you will be asked to choose a "bit character". This is the character which makes up the letters on your banner. After entering your choice of bit, your banner will begin to print out. Choice 3 will use the same letter for a bit as the letter it is currently printing. After your banner is finished, the program will run again.

```

100 REM BANNER 1000
110 CLS
120 PRINT AT 4,7:"***BANNER 100
130 0***"
140 PRINT AT 10,2:"ENTER YOUR M
150 ESSAGE TO PRINT"
160 INPUT A$
170 IF A$="" THEN GOTO 140
180 DIM B$(32)
190 DIM X(8,8)
200 REM CHOOSE BIT
210 CLS
220 PRINT AT 4,7:"***BANNER 100
230 0***"
240 PRINT AT 8,6:"CHOOSE BIT CH
250 ARACTER"
260 PRINT AT 10,6:"(1) "
270 PRINT AT 12,6:"(2) "
280 PRINT AT 14,6:"(3) SAME AS
290 LETTER"
300 INPUT A
310 IF A<1 OR A>3 THEN GOTO 260
320 REM PRINT BANNER
330 CLS
340 FOR D=1 TO LEN A$
350 IF CODE A$(D)>128 THEN LET
360 A$(D)=" "
370 FOR Y=1 TO 8
380 LET X(Y,1)=PEEK (Y-1+7560+

```



```

8*CODE A$(D)))
400 NEXT Y
410 FOR Y=1 TO 8
420 LET E=X(Y,1)
430 LET X(Y,8)=(E)=128)
440 IF E>=128 THEN LET E=E-128
450 LET X(Y,7)=(E)=64)
460 IF E>=64 THEN LET E=E-64
470 LET X(Y,6)=(E)=32)
480 IF E>=32 THEN LET E=E-32
490 LET X(Y,5)=(E)=16)
500 IF E>=16 THEN LET E=E-16
510 LET X(Y,4)=(E)=8)
520 IF E>=8 THEN LET E=E-8
530 LET X(Y,3)=(E)=4)
540 IF E>=4 THEN LET E=E-4
550 LET X(Y,2)=(E)=2)
560 IF E>=2 THEN LET E=E-2
570 LET X(Y,1)=(E)=1)
580 NEXT Y
600 FOR F=24 TO 1 STEP -1
610 FOR I=8 TO 1 STEP -1
615 IF X(I,F/3)=0 THEN LET E$="
620 IF X(I,F/3)=1 THEN LET E$=(
" AND A=1)+(" AND A=2)+(A$(D
) AND A=3)
630 LPRINT E$;E$;E$;E$;
640 NEXT I
650 LPRINT
665 IF F<3 THEN GOTO 665
680 NEXT F
665 IF D<1 THEN GOTO 680
670 NEXT D
680 RUN

```

More One-Liners for the 2068

The "2068 Spirograph" routine drew a good bit of response including a letter from Robert Hartung, former writer for SYNC magazine. He informs us that the routine is a variation of one which is at the top of page 472 of Morse, Adamson, Anrep, and Hancock's Essential Guide To T/S Home Computers. Another variation is this one Robert made up for SYNC the month Ziff Davis pulled the plug.

```

1 LET P=INT (RND*3): LET I=IN
T (RND*3): IF P=1 THEN RUN
2 CLS: PLOT 65,27: ON ERR GO
TO 2: INK 1: PAPER P: BORDER IN
T (RND*3): BRIGHT INT (RND*2): D
RAW OVER 1,120,120,INT (RND*300)
+PI: PAUSE 60: IF INKEY$="0" THE
N ON ERR RESET: STOP
3 RUN
4 SAVE "draw" LINE 1
5 REM - Keying "0" during the
PAUSE 60 of line 2 permits stop-
ping the routine. Otherwise the
ON ERR instruction will ignore
"STOP" and "BREAK".

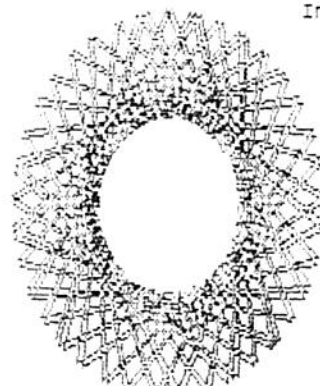
```

The following short programs were borrowed from the Sinclair Timex User Groups Newsletter of the Boston Computer Society (Volume 3, issue 4). As you can see some pretty neat effects can be achieved using only one program line with the 2068.

```

10 INPUT "Type a number, 0 to
20 IF X=0 THEN INPUT "How many repeats to
30 IF X=1 THEN FOR I=1 TO 4: PLOT 0,0,0,0
40 IF X=2 THEN FOR I=1 TO 100: PLOT 0,0,0,0
50 NEXT I
60 INPUT "Input 5,5

```



```

10 FOR X=0 TO 65 STEP .1: PLOT
2*X*5 IN X+125,X*CO5 X+33: NEXT

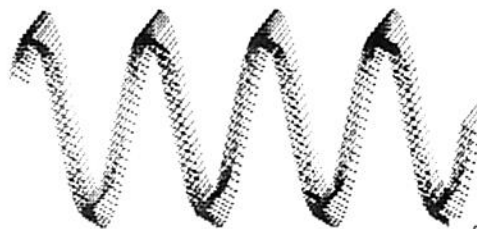
```



```

10 FOR X=0 TO 254: PLOT X,40*5
IN (X/10)+33: DRAW 10,10: DRAW -
10,5: NEXT X

```



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More Power to Ya

NAME: Electra-Guard 1
PRODUCT: Voltage Suppressor
PRICE: \$16.95
AVAILABLE FROM: E. Arthur Brown
3404 Pawnee Drive
Alexandria, MN 53608
(612) 762-8847

How many of you have experienced this situation?:

You are sitting at your keyboard, typing in the "ultimate" program. You've been at it for three hours, and you have two lines left. Suddenly, your wife starts the clothes dryer in the basement...you see a glitch on the screen...POOF!!! Three hours of work down the drain...

This problem is caused because household electricity is "raw". That is, the current is not carefully regulated, and surges, or "spikes", can occur instantaneously, possibly causing even permanent damage to your computer.

The solution is to attach a surge protector or voltage regulator to the outlet that your computer is plugged into. But, the cost of the device has been more than the price of most home computers.

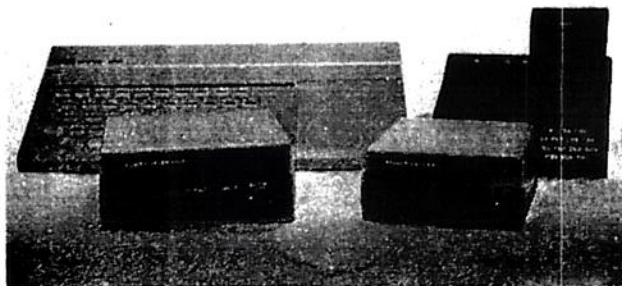
That is, until now. E. Arthur Brown Company has a low-cost voltage suppressor available called the ELECTRA-GUARD 1. For under \$20.00, you can give your system protection against surges and spikes.

The ELECTRA-GUARD 1 has a Windicator, a visual indicator to determine that it is doing its job. ELECTRA-GUARD is also good for stereos, microwaves, or any electronic appliance you have.

I do not claim that ELECTRA-GUARD 1 will do the same job as those over - \$100.00 surge protectors, but it will protect well enough to warrant buying it for your system.

ELECTRA-GUARD 1 is one of those devices that is doing its job when you DON'T notice it. For low-cost protection for your computer system, I highly recommend it. Bill Ferrebee

Power Saver 1000 (\$59.95)
Power Saver 2000 (\$199.95)
H & Z Electronics
P.O.Box 8761
Madison, WI 53708



POWER SAVER 1000 & 2000 BATTERY BACK-UP

The Power Saver 1000 is an uninterruptible power supply for the TS 1000 series of computers (ZX81, TS1500). The Power Saver 2000 is similar, but for use with the TS 2068.

There are two ways in which the Power Saver 1000 (or PS 1000) charges itself; these two modes are selected by a switch on the case. In fast mode, the PS 1000 recharges from no charge up to full charge over a period of several hours (overnight) when the computer is not in use. After the batteries are fully charged, the slow charging mode draws off a trickle of current continually to keep the batteries at maximum charge. The PS 1000 is self-regulated to protect against overcharging.

The PS 1000 works as advertised. I was able to unplug the Sinclair power supply (which supplies the power to the PS 1000) for several minutes without memory loss. The instructions say that the computer can be operated up to 7 hours in this manner. With 16K the charge lasts 3½ hours.

So if your household current is undependable or if your computer blanks out each time your refrigerator or furnace comes on, this unit should be very helpful. It would have been nice if they had incorporated a surge suppressor in the design, that way you would be protected from too much or too little power. It would also be nice if you didn't have to remove the cover to change the fuse.

Dan Richardson

TSH

BOOK REVIEW
By: Tex Faucette

MUNCHERS (The Ultimate Timex/Sinclair Games Book) by Yin Chiu and Henry Mullish
Copyright 1984 by McGraw-Hill Book Company
ISBN 0-07-010839-0

(It should be noted that the copy being reviewed herein is an "uncorrected page proof" with a "Probable Publication date" of 8/84.)

While the subtitle, "The Ultimate T/S Games Book", is somewhat pretentious, MUNCHERS is a well organized, worthwhile effort. There are three major sections. The first is games for the unadorned T/S 1000, the second is for the 16K machines, and the third is for the T/S 2068.


A grand total of 32 programs are presented, ranging from simple "Zap The Whatever" typed to more sophisticated gambling and word games, and includes a "Color Organ" for the T/S 2068. "Super Slot" is presented in versions for both the 16K machines and the

T/S 2068, the latter version containing User Designed Graphics and sound.

The most valuable feature of this 240 page volume, especially for the beginning programmer, is the notes which accompany each program. Each listing is preceded by an explanation of what the game does and followed by notes concerning action produced by certain specific lines, and some suggested modifications. Appendices contain instructions for "LOAD", "SAVE", and "VERIFY", lists of keywords and graphics symbols; pictures of the T/S keyboards; and an extra copy of program 1.

I hope you can find a copy of MUNCHERS at your favorite bookstore.

TSH



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BONNIE & CLYDE SOFTWARE
P.O. Box 13651
Albany, N.Y. 12212

SPECTRUM REVIEW



By: Melbourne House
131 Trafalgar Road
Greenwich, London SE10
14.95 pounds

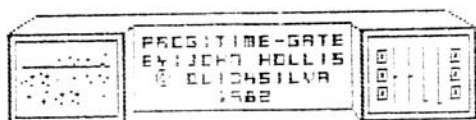
The Hobbit is a graphics adventure game for the 48K Spectrum. It will run on the Spectrum rom or a Spectrum Emulator. The program takes about 6 minutes to load (and has a very neat screen string, as pictured with the dragon and mountain). The game is very tough. The best I have done is only 5% of the adventure (the program tells you what percentage of the game you did after you have died). The graphics are also very excellent and very interesting.

The whole game is based on the book the HOBBIT by J.R.R. Tolkien. If you are really into great adventure games, you'll love this one! I like to play it quite often and you simply can't beat it. The graphics are in full color and are drawn out (much like many of the graphic adventures made for the Apple computers). The program is very self-explanatory, as most adventure games are. You just give the computer a command like "NORTH" and you will go north. If you have read the book or seen the movie, many of the pictures and quotes will be familiar to you. I highly recommend the game if you don't mind the price. For the 14.95 pounds (about \$20 American money) it is well worth it.

TSH

TIME-GATE

SHIP CONTROLS
THE SHIP'S INSTRUMENTS ARE
DIVIDED INTO FOUR SECTIONS.



TIMEGATE from Quicksilva is a very fast action space adventure arcade-type game for the TS2068. It was originally written for the SPECTRUM and has been faithfully re-done for the TS2068.

According to the info flyer from Quicksilva "a hero is needed to save the universe by fighting the evil Swarm..." The directions for this game are contained on one side of the tape and the actual game on the other side. The directions are very thorough but if you have a printer it is worth your while to LIST them in order to read them at your leisure.

Once you are done with the instructions you can flip the tape over and load the game. It loads in a relatively short period of time, approximately 2½ minutes. You must first select a level of play before starting the game. This sets the speed of play. Then you will be placed in a quadrant of the galaxy. Your position is depicted on the 'screen' (see figure). You can play this game with or without a joystick, but I suggest you invest in one. It makes the action seem more realistic.

The object of the game is to find the time warp through which you must pass in order to destroy the planet of the Swarm. Each time you find a time-gate you travel back in time with ever increasing numbers of enemy ships to destroy. The ships can fire at you and each hit registers on the 'computer screen'. Various messages let you know what the damage is. There are also indicators which tell you the status of your ship's equipment.

You have plenty of opportunities to replenish yourself by landing on a planet, but by doing so you destroy that particular planet. The best strategy is to plan to destroy 6 enemy ships for each planet you land on. Of course the time-gate may be any where so you could go back in time with a disabled ship. (That's part of the game, but you will vaporize soon...)

I enjoy playing this game. Not only do you move through space but also through time. There is a provision to list the top 10 scores, but you addicts out there beware!! One game may last over an hour and you won't want to let anyone touch those controls.

There are some bad points to the game though. There are no written instructions which makes playing the game difficult without a printer. The two sides of the tape are identically marked. I suggest you take a pen and mark the game side. In addition, there is no SAVE game/hi-game feature. This game cannot be broken in to.

All in all this game is worth the money. I have seen prices ranging from \$18.95 to \$24.95. Almost all the mail order houses have it. Have fun zapping the Swarm.

W. M. Pierson
338 E. Thurston Street
Elmira, New York 14901

TSH

REVIEW

"UPLOAD2000"

By: Bill Ferrebee

PROGRAM NAME: UPLOAD2000

TYPE: Utility (Program Conversion)

MACHINE: TS2068

PRICE: \$19.95 (Optional Load Filter \$9.95)

AVAILABLE FROM: E-Z KEY

Suite 75,711 Southern Artery
Quincy, MA 02169

If you're like me, the TS 2068 was not the first computer you owned. You probably had a ZX81 or TS1000, and probably have plenty of programs to run on it.

Now that you've moved on to the more sophisticated TS2068, you probably think to build a library for it, you'll have to start from scratch, right?

WRONG! Almost any program you have in BASIC for the ZX81/TS1000 can now be used on the TS2068 with the use of UPLOAD2000.

UPLOAD2000 is a program that enables you to convert almost any BASIC 1000 program into a working version for the 2068.

Notice I said "BASIC" program. The program must be written totally in BASIC, with no Machine Code.

The procedure to translate is quite simple. First, you load UPLOAD2000 into the TS2068. Next, you type a RAND USR command given, and then load your 1000 program. After it finishes loading, list the program. It should look exactly like it does in the 1000.

Next, you will have to edit the program. Remove all FAST and SLOW commands. Other keywords, such as CHR\$, CODE, PEEK, and POKE will have to be modified to fit 2068 code.

Once you have finished editing, you can save this new version for use, or you may want to modify it further. Why not add color and sound?

I have used UPLOAD2000 on numerous occasions, and the results have been very good. To insure a good load with your 1000 program, I recommend getting the Load Filter that E-Z KEY has available. It plugs into the cord between the computer and the cassette recorder.

Depending on the length of the program, editing may be from none to quite a bit. But, I would rather edit a working version than to rekey an entire program.

I feel that UPLOAD2000 is a very good utility program for its purpose, and recommend it to those that want to make use of their 1000 programs in the 2068.

TSH

REVIEW
TRIVIA MACHINE
By: Bill Ferrebee

PROGRAM NAME: Trivia Machine

TYPE: Entertainment

MACHINE: TS 2068

PRICE: \$24.95 (Master Module)

AVAILABLE FROM: CURRY COMPUTER

5344 West Banff Lane
Glendale, AZ 85306

One of my favorite activities, when I am not working at the keyboard, or at my job, is being a "Trivialist". I love playing Trivial Pursuit, and of the other trivia games available.

That's why when I received TRIVIA MACHINE, by MANX Software, I was anxious to test myself. The program is designed to be played with 2 to 4 people, and has over 800 questions in a variety of categories.

I was surprised to see how current some of the questions were. For example, the program asked who Walter Mondale's running mate was in the 1984 Presidential election!

Each time the program is loaded, all 800 questions are shuffled, and no question will repeat until all have been used. The player is awarded 5 points when correctly answering a question, and the first to attain 100 points wins.

The only drawback to using a computer to play trivia is that the answer has to be spelled EXACTLY. If you miss by one letter, the answer is incorrect. But this can not be helped, and should not keep you from getting TRIVIA MACHINE.

Plans are to release additional question sets, and since I love trivia, I hope they release many more sets.

If you want to get some sheer entertainment for your TS 2068, get TRIVIA MACHINE. I guarantee you'll enjoy it.

TSH

The Suntronics KD-81 Keyboard

\$49.95 plus \$4.00 postage and handling

Order from: Suntronics Company, Inc.

12621 Crenshaw Blvd.

Hawthorne, California 90250

(1-800-421-5775)

(213-644-1149)

By Doug Gangi

The Suntronics KD-81 is a full sized keyboard made specially for the Timex 1000/Sinclair ZX-81. It is an excellent keyboard with the Timex legends silk screened in two colors. The keyboard comes with a shielded case into which the Timex board fits. There are two oversized SHIFT keys, and oversized ENTER key, and yes, a full-sized SPACE BAR! The key feel is excellent (the keys are comparable in feel to the ATARI 800.) There is very

little work involved to install the Timex board into the KD-81 case (no soldering at all.) The only tool needed is a screwdriver. Even a first-timer could do it. Just remove the TS bottom, unscrew and lift out the TS PCB, and then insert it into the KD-81. Insert the 3 included screws and it's in!

Since the KD-81 case is much larger than the TS PCB, there is a space about 3"-4" wide and 2" tall to put in whatever you want (I installed a sound amplifier into this space and I still have room!)

So if you are looking for an upgrade from the T-S membrane keyboard, I think the Suntronics KD-81 is your best bet for under \$100. TSH

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- Finds any string of characters and lists every line containing that string.
- Replaces any string, in every line in which it is found, by any other string.
- Deletes all lines beginning with REM. Helps conserve memory and load time for operating versions of your programs.

Cassette \$19.95 ppd.

J.C. KILDAY ASSOCIATES
CENTRAL AVENUE
PEAKS ISLAND, ME 04108

HARDWARE REVIEW

by P. Donnelly

ITEM: DK' Tronics Flexible Ribbon Connector
FROM: DK, SUFFERN, WALDEN, ENGLAND (799-22159)
PRICE: \$15.00 (check exchange rate)

DK' Tronics flexible ribbon connector has a 46 pin female connector on one end, for attaching to the back of your ZX/TS computer, about 8" of 40 strand flexible flat ribbon cable and a male solder plated ZX/TS connector on the other end. One of the primary uses of this type cable is to fit to a Sinclair RAM pack to eliminate wobble. The unit can also be used to connect other peripherals, especially those that don't fit well together.

The cable functions acceptably for most applications, but has one design flaw which may make it incompatible with some of your peripherals. You may have noticed that we said the connector had 40 strands. The ZX/TS bus has 2 X 23, or 46, positions; of these, two are lost to

the keyway and there are 2-0 volt pins, one of which we could live without. This still leaves us with a need for 43 pins, if we want complete access to the 280's busses. Specifically, the cable is missing RESET, WAIT and BUSRD. These are not used by many peripherals, but if you have some of the ones that do use them, particularly WAIT (e.g., for use with 2716's) or RESET (as on peripheral boards with a RESET switch), you might be in for a surprise.

One saving grace of DK's cable is that they have provided plated through holes at the male end for the three missing control lines. You could run your own short jumpers from these holes to the exposed positions of the appropriate pins on the female edge connector. Not a big job, but one that shouldn't have been necessary.

I can't recommend this particular unit based on its price/quality ratio. Do check with any supplier of such cables before you buy as to which lines are supported.

TSH

HD SOFTWARE
1445 Oldfield Road
Decatur, Georgia 30030

COUPON MAGIC

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T / S 2 0 6 8

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A storage list that holds 100 items and their location
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A shopping list manager that will knock your socks off
While the other two files are great, the shopping list is the one that gets most of the work done. Like the other two, it has on screen edit, but it also will check up on the other files. It will tell you approx. how much money to take when you go to the store, then print out a shopping list on your 2040 that can hold up to 100 items with notation to tell you if you have a coupon for an item. It also makes a notation if you have the item stored someplace.

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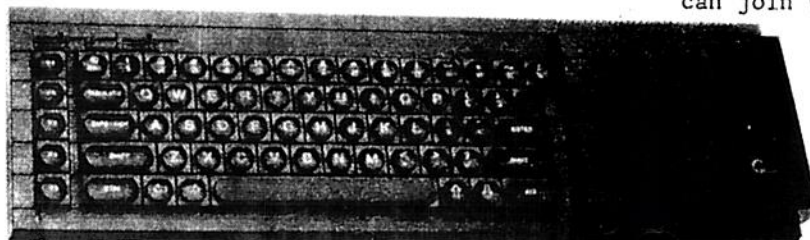
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TUCSON, AZ 85731

T-S NEWS



Sinclair QL Technical Profile



System Configuration

Basic system for \$499 (U.S. price only) includes two processors, two custom-designed control chips, 128K main memory (expandable), operating system, programming language, full-size 65-key QWERTY keyboard, twin QL Microdrives (100K-byte capacity each with 3.5 seconds average access time), four software programs on Microdrive cassette (word processing, spreadsheet, database management, graphics), four blank Microdrive cassettes, power supply, connecting cables and adapters for TV, monitor and LAN.

Hardware

RAM: 128K, expandable externally to 640K (32K dedicated for screen bit map).

ROM: 48K, contains Sinclair SuperBASIC and Sinclair Qdos operating system (expandable via ROM cartridge to 64K).

CPU: MOTOROLA 68008, running at 7.5MHz, for all principal functions. (Architecturally the 68008 is a 32-bit processor with an 8-bit data bus. One megabyte of non-segmented address space is available.)

INTEL 8049, a second processor, controls keyboard, sound, RS-232C receive and real-time clock functions.

Custom Chips: Four Sinclair-designed ICs. The first controls display and memory; the second controls the Microdrives, the real-time clock, local area network and RS-232C transmission; the third and fourth provide analog functions required by the Microdrives.

Video: High-resolution graphics capability with color/monochrome monitor (or TV) in two modes; 512 x 256 pixels (4-color), 256 x 256 pixels (8-color).

Normal character display format up to 85 x 25 with choice of character sets available; TV format up to 60 columns depending on software.

Power Supply: 120 volts at 60Hz, 9v DC at 1.8 amps, 15.6v AC at 0.2 amps from transformer unit (19 watts to computer).

Mechanical Specifications

Dimensions:	5 1/4"	x	1 3/4"	x	18 3/4"
	138mm	x	46mm	x	472mm
Weight:	3.055 lbs. (1388 gms.)				

ITEM: The QL is coming! We received a very attractive full color booklet from Sinclair Research that tells everything you've always wanted to know about the QL-except when it will be available. Much of the information has been published in T-S Horizons before but it does go into more detail on the word processing, database, spreadsheet, and graphics software. Announced future developments include a C compiler, a 68000 assembler, a terminal emulator to tie into mainframes, 0.5 Mb expansion, analog-to-digital converter, Winchester disk drive interface (what's Clive got against floppy disks?), modems, and more. Also for \$50 per year you can join QLUB (QL Users Bureau). Membership includes six newsletters per year, free updates to the four programs mentioned above, technical tips, etc.

Sinclair Research Limited USA
50 Staniford Street • Boston • MA 02114
Telephone 617-742 4826

Software

Operating System: Qdos, developed by Sinclair. Key features include:

single-user multiple tasking
time sliced priority job scheduler
display handling for multiple screen windows
device-independent input-output

Language: Sinclair SuperBASIC. Key features include:

procedure structuring
extendability (including syntax)
interpretation speed independent of program size
clean machine code interface
operating system facilities accessible from SuperBASIC
equal capability for strings and arrays

Communications

Serial: Two standard RS-232C communications interfaces for printers, modems, etc. Transmission at rates from 75-19,200 baud or full-duplex transmit/receive at seven rates up to 9600 baud. (Note: a parallel printer interface is under development as an optional extra.)

LAN: For up to 64 Sinclair QL computers; data transmission over the net at 100K baud

Expansion

Excluding RGB monitor and power sockets and the TV port, nine peripheral/expansion ports are provided; internal expansion (1 port), Microdrive expansion (1), ROM cartridge (1), serial (2), local area network (LAN) (2), joysticks (2). For serial and LAN, see Communications.

Memory: One megabyte of non-segmented address space is available for almost unlimited potential for expansion.

Microdrive: Enables a further six QL Microdrives to be attached. Four blank cartridges are supplied with each QL.

ROM Cartridge: Accepts one QL ROM cartridge up to 16K.

Joysticks: Provision for one or two for games or cursor control.

Attention Technical Types: SUM* is here!!!

SUM

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TS1000-ZX81 \$18 TS2068 \$20

STOCK PLOT

This program written by Kendric Smith will Plot Prices and volumes for the last 26 weeks. Graphs of each stock can be printed to the screen or to a printer. Listing of HI-LO, P-E Ratio, PURCHASE PRICE, CURRENT PRICE, %PROFIT, %PROFIT(LOSS) of Portfolio, etc.

TS1000-ZX81 (19 stocks) \$14
TS2068 (200 stocks) \$16

All TS1000-ZX81 programs require 16K. All prices include postage. NY residents add sales tax. Deduct 10% on the purchase of 2 or more software packages.

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WMJ DATA SYSTEMS
Dept. TSH
4 BUTTERFLY DRIVE
HAUPPAUGE, NY 11788

T-S NEWS

ITEM: Zebra Systems Bulletin Board has recently changed its phone number to (718)296-2229.

ITEM: Zebra Systems has several peripherals for Timex Computers which are not available from other sources. They have just announced their Graphics Tablet package for the 2068 (Koala Pad, Zebra-Painter Software, Zebra Graphics Interface, Manual, 90-Day Warranty) for \$119.95. They are also the only source we know of for light pens, voice synthesizers, and more for both the TS1000 and 2068. Zebra Systems, 78-06 Jamaica Avenue, Woodhaven, New York 11421 Phone (212)296-2385.

ITEM: Inventory management software for the 2068. INVO-STAR uses cassette-based data storage and menu-driven operation, and prints lists and packing slips to the 2040 printer. \$15 to Magic World Software, P.O.Box 1184, Olympia, Washington 98507. (206)786-1390.

ITEM: Down East Computers now has a TS 2068 version of their "VOTEM" Analog Interface. VOTEM allows your TS1000 or 2068 to measure, display and record real-world analog signals (pressure, light, temperature, etc.). Also can be used as a tape loading filter. For more information write: Down East, P.O.Box 3096, Greenville, North Carolina 27834.

ITEM: Memory Scope is a utility program for the TS1000/1500/ZX81, that allows you to view the "inside" of your computer. Memory Scope allows you to see any part of your computer's memory from 0 to 64K. It allows you to modify machine code programs and even monitor the computer's memory as the computer operates. For more information write to Bonnie & Clyde Software, P.O.Box 13651, Albany, New York 12212.

ITEM: We recently received a "key finder card" from Banta Software. It is a 3" x 15" reference card that fits above the 2068 keyboard to save time in locating all those keywords. It lists each keyword and symbol along with the key locations and shift keys required to use each one. \$1.95, quantity discounts available. Banta, 8088 Highwood Way, Orangevale, California 95662, (916)722-4895.

ITEM: Mail Merge capabilities for 2068 word processor. VIEWord is a word processor for the TS2068, and two new programs are now available to allow printing of personalized form letters using names on a mailing list. The mailing list program is MAIList and the merging program is FORMail. All programs use the same menus and commands. Other programs available from J. Clatfelter, 646 Corwin Avenue, Glendale, California 91206.

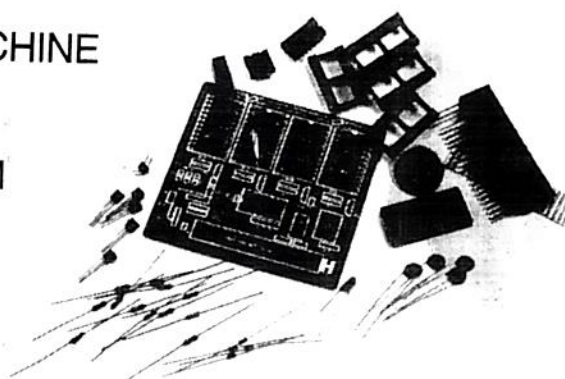
ITEM: Bill Moreland, owner of Magic Castle Video in Columbus, Ohio, and former T/S Horizons columnist, no longer handles Timex Sinclair merchandise, as some back issue purchasers have discovered. However, if your looking for the best in home video, Magic Castle is still the place to go. TSH

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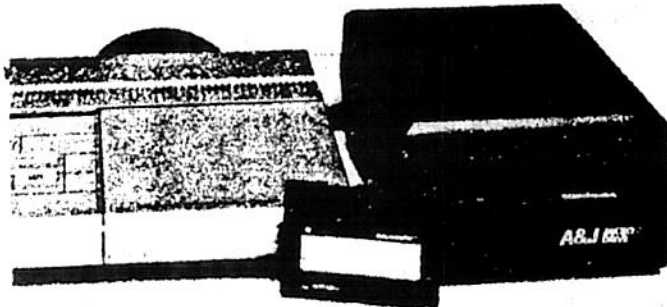
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